DECLARATION

I hereby declare and affirm that this Thesis is entirely my own work and composition

Signed

Date 21st July, 1976.

THE VALLEY TRUST SOCIO-MEDICAL PROJECT FOR THE PROMOTION OF HEALTH IN A LESS DEVELOPED RURAL AREA.

by

Halley Harwin Stott

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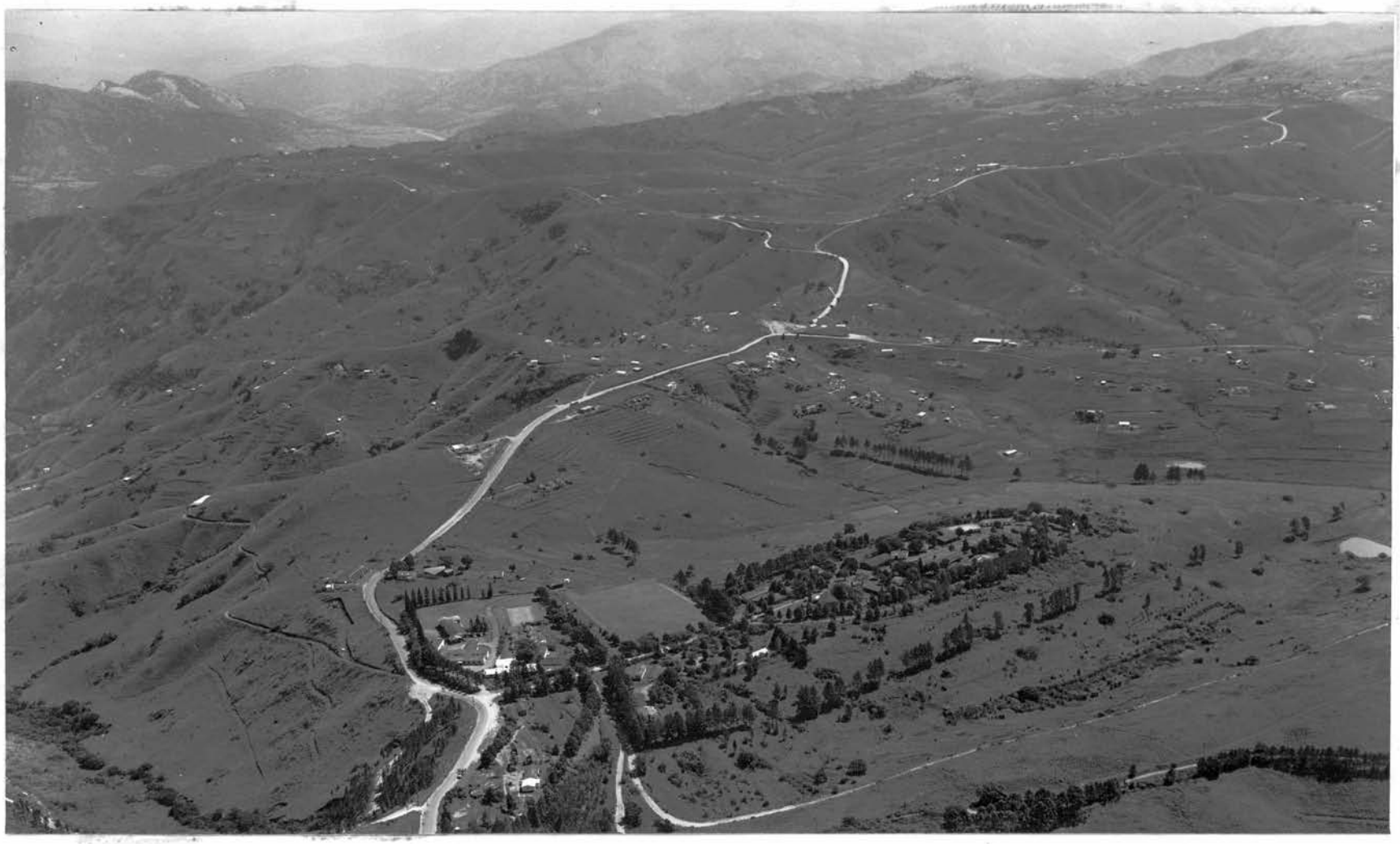

Fig. 1 Aerial view of Valley of a Thousand Hills at Botha's Hill, Natal (Nov. 1975). In foreground, situated alongside the main access road to the Valley, is the centre of Valley Trust and Health Centre activities with the adjacent T.B. Settlement continuing to the right.

If you give a man a fish, you feed him for one day . . . but if you teach a man to fish, you feed him for many days.

Old Chinese Proverb

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To Professor E.J. Krige I wish to record my great gratitude for much generous help, advice and guidance, particularly in the social and anthropological aspects of Chapters II and III which provide essential background information giving greater meaning, purpose and realism to the chapters that follow.

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S U M M A R Y

The Zulus living in the Valley of a Thousand Hills at Botha's Hill, Natal, represent in microcosm the universal problem of diminishing food resources in the face of alarming population growth - the problem cycle of ignorance, soil neglect and misuse, low productivity, restrictive customs and beliefs, poverty, malnutrition and disease.

Against this background, The Valley Trust, a socio-medical promotive health experiment, has for many years been establishing and sponsoring a variety of services and facilities aimed primarily at arresting the rapidly deteriorating dietary practices of the people.

Recognising that faulty dietary practices have their roots in a multiplicity of complex physical and biological, no less than mental, economic and cultural factors, a wide and practical long-term socio-medical approach has been adopted.

A medical service provides the spearhead to the overall experiment and it is around and in close association with this that the various services and facilities have been established. The principal focus is on nutrition education, particularly in respect of mothers and children. Parallel with nutrition education is the encouragement given to domestic gardening to promote the production of protective foods in order to counter the highly refined carbohydrate diet of the people with its low protein, vitamin and

mineral content.

Fundamental to the success of this overall experiment is the obligation placed on the doctor and, or, nurse to encourage in patients an awareness of their nutritional requirements and to motivate them towards taking advantage of the multiple promotive health services and facilities which are provided by The Valley Trust nutrition education and agricultural sections.

Emphasis is laid on the unique opportunity for gaining patient interest that is available to doctors and nurses functioning at the interface between the patient, conditioned by concern over illness, and the agencies for beneficial change. In this context, emphasis is also laid on the educative value to family and community of domiciliary medical care by the nurse, particularly in such circumstances as exist in the Valley.

The far-reaching importance in nutrition education of the association between doctor, nurse, nutrition educator and agricultural demonstrator is discussed. Other aspects discussed are the principles of development such as the avoidance of imposition, securing the active participation of the people in order to develop initiative and a sense of responsibility, the use of local human and environmental resources and the necessity for research and evaluation studies.

The progress of the overall experiment in terms of changes in agricultural practices, nutritional habits and health standards are assessed in the light of the fact that it is a continuing experiment.

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CHAPTER I

THE LAUNCHING OF THE PROMOTIVE HEALTH PROJECT

The need for health services in the Valley

The prevalence of disease, with its many implications, among the Zulu living under backward conditions in the Valley of a Thousand Hills at Botha's Hill, Natal, provided an opportunity for the launching of a promotive health experiment in which a medical service could be brought into closer relation with those factors in the aetiology of ill-health that have their origin in the socio-economic pattern of life - particularly those factors underlying malnutrition with its many implications.

The need for such a service, designed not only to meet medical needs but to enlighten the people, was evidenced by the ever-increasing stream of the products of ignorance from the Valley, and similar undeveloped areas, that congested costly urban hospital wards only to be discharged later, no better informed, to the same conditions from whence they came - products of faulty dietary habits, bad cooking practices, poor food production, bad child-rearing techniques, ignorance of hygiene, restrictive taboos and superstitions, mystical conceptions of disease, fatalism, social disruption, neglect and misuse of environmental resources, and not least, poverty.

To implement such a programme, the author secured, in 1947, a strategically situated site of approximately 150 acres (60,7 ha), on the fringe of the Valley adjacent to the large Zulu Reserve and alongside its main access road. (Fig. 1, p.(i)). Here, it was considered, the aims of the experiment could best be realised, as the adjacent tribal areas accommodated a homogeneous and relatively integrated community of a minimum of 35 000 persons who were reasonably accessible for the development of the medical, nutritional, agricultural, educational, ecological and other services and facilities envisaged. In addition, the basic human and environmental problems it represented closely resembled those to be found in similar areas throughout the country; thus a successful outcome to the socio-medical experiment could possibly provide principles and guidelines for wider use.

The Health Centre as spearhead of the project

Appreciating that the imposition of measures for enlightenment and rehabilitation in such an area, without the understanding, co-operation and participation of the people, would be to invite suspicion of motives, opposition and failure, it was planned that a medical out-patients service should be established as the spearhead to the scheme. This, it was considered, would fill an urgent need felt by the community, be readily accepted and thus provide channels along which many of the para-medical, social and other agencies planned, could develop.

As it was essential that no members of the

community should be precluded from its services for reasons of poverty, the author negotiated between 1948 and 1950 with the Union Department of Health (now designated State Health Department) for its co-operation in providing a medical service for the area. This resulted in the establishment of the Botha's Hill Health Centre and, on the 2nd January 1951, a free out-patient medical service became available for the people of the Valley of a Thousand Hills and surrounding areas (Fig. 2).

The design, lay-out and erection of the buildings were the responsibility of the author; the equipping, staffing and running costs the responsibility of the Union Health Department to whom the building was leased.

In terms of the agreement the author was appointed Medical Officer-in-Charge on a temporary contract basis, with reasonable freedom to develop and administer the service on lines appropriate to the wide socio-medical programme he envisaged and within the limits determined by availability of suitable personnel, equipment, transport and finance.

That the Health Centre met an urgent need felt by all sections of the community was apparent from the time its doors were opened. By the end of 1951 total attendances had exceeded 16 000. A channel of approach to the community had thus been established which provided opportunities for closer contact, study and understanding of the people and their problems.

The chief guidelines in the development of the Health Centre have been the avoidance wherever possible

Fig. 2 Spearhead to the overall socio-medical project - the Botha's Hill Health Centre in its dry, eroded, infertile setting as seen from the air in 1950.

of hospitalization in favour of domiciliary treatment by the nurse; integration of nutrition education into Health Centre clinics and domiciliary treatment; a striving for a favourable response from patients and an attempt to secure the co-operation of the community as a whole, e.g., in providing sites and facilities for the establishment of peripheral clinics or sub-centres.

The Valley Trust

Having laid the foundations of the socio-medical experiment, the author deemed it expedient to create an association to assume responsibility for its future administration, overall development and the furtherance of its objectives. The Valley Trust was formally constituted and registered for this purpose in February 1953 with, in due course, members on its management committee from the fields of medicine, law, education, the church, commerce and industry. Various departments of the University of Natal, including Medicine, African Studies, Agriculture, and Fine Arts are represented because of the importance attached to research in the programme of The Valley Trust. The author has retained the position of Chairman and Director up to the present and continued as Medical Officer-in-Charge of the Health Centre until 1970 when he resigned to apply himself wholly to The Valley Trust.

The Valley Trust is a registered Welfare Organization, non profit-making, entirely dependent upon voluntary help, subscriptions, donations and bequests and

does not receive financial assistance from Government or Province. Control is in the hands of a Board of Trustees and Management Committee. The services of all members are voluntary.

The principles fundamental to Valley Trust thinking and development include the avoidance of all forms of imposition or interference in the lives of the people, particularly their institutions, such as the indigenous "medicine" men and women; the avoidance of short-term measures of expediency which could stultify human initiative and resourcefulness; the encouragement of the use of available local human and environmental resources, and the encouragement of community participation and involvement in the development of the experiment as a whole.

The programme for improved nutrition

In the context of expediency and the use of natural resources, it is emphasized that as the Valley represented some of the most eroded and unproductive areas in the country, where financial resources of the people were extremely limited, the objective aimed at was to produce health-promoting vegetables, legumes and fruits, using only local environmental resources. Thus agents such as chemical fertilizers, which were beyond the resources of the people or their ability to use judiciously, were avoided. Even before the establishment of The Valley Trust there were demonstrations in the vicinity of the Health Centre in soil conservation, soil rehabilitation,

composting and vegetable gardening. A tree nursery was also established for the free distribution of fruit trees and trees suitable for use as windbreaks.

Early successes in the use of compost made from local weeds, grasses, domestic and animal refuse etc., in improving moisture-retention properties of the hard, infertile, sun-baked soil, with resultant improvement in soil fertility and potential for protective food production, constituted a major advance in the nutrition education programme. Productive vegetable gardens around the Health Centre, from 1952, demonstrated unequivocally that these medically recommended natural fresh foods could be available to all Valley dwellers regardless of economic status.

The wider implications for water and soil conservation and environmental rehabilitation, along with changed attitudes towards agriculture generally, in these areas, are discussed later. The formulation of practical objectives for the broad, long-term, socio-medical approach of The Valley Trust to the problem of malnutrition and its implications, their implementation and the sequence of developments in the overall experiment from 1947 to 1975, are summarized in Chapter IV.

Complementary nature of Valley Trust and Health Centre

Valuable as its demonstrations and teachings have proved to be, The Valley Trust alone could not have made much headway in achieving the objects of this project without the support of the Health Centre. Nutrition

education and agricultural services are essentially complementary to the medical services. Furthermore, one cannot over-emphasize the importance of the role and potential of the clinician, or nurse, in awakening the interest of the patient in dietary habits at the time of the clinical interview. In this way the patient is motivated for the acceptance of the complementary services of the nutrition educator and, in the rural context, of the agricultural demonstrator as well, with far-reaching benefit, not only in nutritional standards, but in soil rehabilitation and domestic food production.

The notorious, highly-refined, ill-balanced, carbohydrate diet, prevalent today among Africans who depend mainly on purchased, processed foods of low nutrient value, was a focus of attack from the outset of the experiment.

Other early developments in the project

Among other early developments and activities in the overall plan at the time of launching the Health Centre, but independent of it, were: the allocation of sites to the University of Natal for medical and social research, and to the Anglican Church in response to a request from the Zulu community; also to Toc H, Natal, 60 acres (24,3 ha) for the establishment of a Tuberculosis Colony.

The Family Health Surveys

From the outset experimentation and research have

occupied an important place in the project. It was realised that no educational programme, such as that envisaged for improved nutrition, could meet with success unless based upon knowledge and understanding of the people concerned, the socio-economic conditions in which they live, their health, their medical conceptions and beliefs and values. Research and experimentation in agriculture would also have to play an important part in the programme. The Department of African Studies of the University of Natal was fortunate in securing a grant from the Nuffield Foundation for the training of Africans in social anthropological research and, early on in the programme, initiated research in the Valley that has continued up to the present, according to available funds.

The visit of the Secretary for Health and Chief Medical Officer for South Africa, Dr. du Pré le Roux, in company with Sir Andrew Davidson, Consultant to W.H.O., to the Botha's Hill Health Centre and The Valley Trust in May 1955, and again in October 1955, with Dr. Candau, Director General of W.H.O., presented The Valley Trust with an excellent opportunity for gaining an insight into social and health conditions in the Valley for, as a result of these visits, the author was invited to carry out a pilot health study in the area in which the socio-medical experiment was being conducted. It was to be one of six pilot studies to be presented by each of the following countries: India, the Netherlands, Puerto Rico, Sweden, the Union of South Africa (now Republic of South Africa) and the United Kingdom (Loughborough) on behalf of

W.H.O. These studies were part of a programme of investigation aiming at assisting Governments in the development of local health services. The Botha's Hill Pilot Health Study (Stott, 1959) which covered the period from 1951 to 1958, was undertaken by the author in the dual capacity of Medical Officer-in-Charge of the Botha's Hill Health Centre and Director and Chairman of The Valley Trust, and was submitted to the World Health Organization in 1959. (W.H.O., 1960). For the purposes of this thesis the Pilot Health Study will henceforth be referred to as the "WHO Report".

Extensive use has been made of the WHO Report in this thesis to provide early background information with regard to the area and its people, also to provide an outline of developments up to 1958, with particular reference to the establishment of the Health Centre out-patient and domiciliary medical services. For purposes of reference and as a supplement to this thesis, Section 2 of the WHO Report, the Family Health Survey (p. 179), has been appended to it (Appendix A). This appendix provides an objective baseline of information relating to environmental, social and health conditions and nutritional practices in 155 households in the Valley in 1958, only a few years after the establishment of the promotive health project.

Fourteen years later, during 1972/3, aspects of this survey relating to nutritional practices were repeated among 105 of the original 155 households. Some of the results of the later study will be discussed in Chapter VII,

where some of the developments and changes that have taken place in the Valley since the launching of the overall socio-medical experiment, are evaluated. (For a list of research projects and publications associated with the socio-medical project see p. 150).

In spite of severe limitations in Valley Trust finance and personnel, the past 17 years (since the WHO Report was submitted) have witnessed further steady development of services and facilities focused around the basic medical framework of the Health Centre.

CHAPTER II

BACKGROUND TO THE SOCIO-MEDICAL PROJECT
THE AREA AND ITS PEOPLE

THE AREA

Terrain and climate

The Valley of a Thousand Hills lies some 20 miles (32 km) inland on the eastern seaboard of Southern Africa, and due west of the city of Durban. It covers approximately 600 square miles (1553 km^2) at $29^{o}35'$ South latitude and $30^{o}30'$ East longitude. The area described in this study consists of roughly 60 square miles (155 km^2) of the south-eastern portion of the Valley. The high plateaux and hills surrounding it are approximately 3000 feet (915 m) in height. Altitudes in the Valley vary from 400 feet (122 m) at the Umgeni River to 2500 feet (762 m) at its highest point. This area lies more or less halfway between the two major cities of Natal, Pietermaritzburg and Durban, which are 50 miles (80 km) apart (Fig. 3, p.13).

The terrain is extremely broken; its steep hills show occasional granite outcroppings and are divided by deep ravines, known in South Africa as "kloofs". The Valley has evolved through the ages by the action of erosion, leaving the high plateaux on its perimeter (Fig. 2, p. 4).

Profiles of deep gulleys caused by erosion show decomposed granite in the deeper layers. The superficial

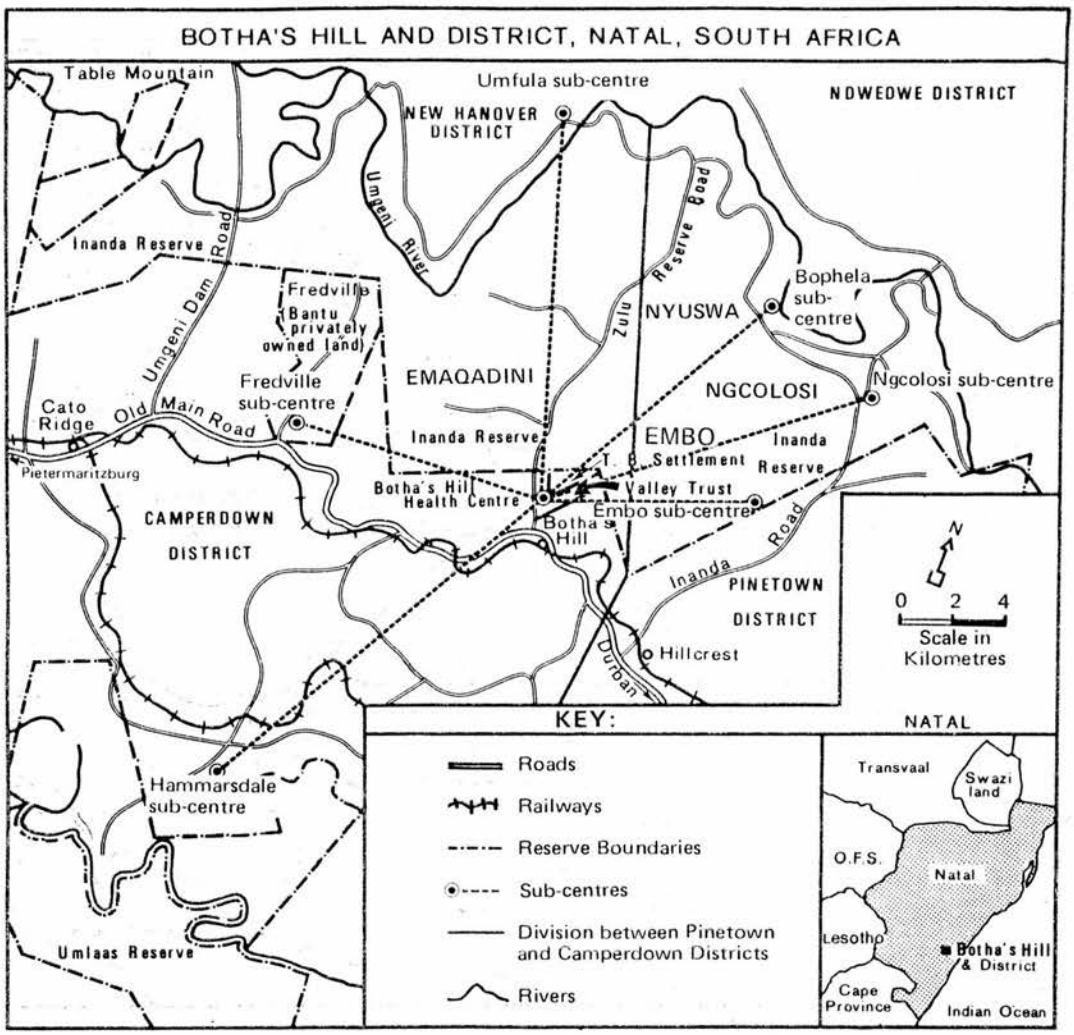

Fig. 3

Centre of operations of The Valley Trust socio-medical experiment adjacent to the Southern Boundary of the Inanda Reserve (Zulu Reserve).

Radiating from the Botha's Hill Health Centre are shown the positions of its peripheral clinics (sub-centres).

layers are fairly loamy. The loam tends naturally to thin out on the hills and to lie in greater depth in the valleys.

The Valley is famed for its beauty and ruggedness. In general it slopes steeply and, in about 10 miles (16 km), almost to sea level when it reaches the lower stretches of the Umgeni River. This is the only large river running through the Valley and its one considerable tributary is the Umsinduze River. The Umgeni rises some 100 miles (161 km) inland in the Drakensberg mountains and is joined in the Valley by countless streams which find their way to it through the hills and kloofs as it runs its tortuous course to the sea. The river is permamently muddy as the result of soil erosion caused by bad practices in cultivation by the Valley dwellers, their habit of denuding the hillside of trees and vegetation, and their failure to replant.

Little water is seen in these multiple tributaries of the Umgeni in the winter months, as the water usually flows below the sandy surface. In the dry beds of these streams, especially in the upper reaches, an occasional patch of green vegetation indicates a sponge, or "vlei", in which a considerable amount of moisture is conserved, and which delays the discharge of water into the Umgeni. It is such sponges that have been utilised in the construction of small dams for fish culture and the watering of vegetable gardens in the nutrition programme of The Valley Trust.

Thick white mist frequently fills the deeper valleys at sundown and lies like cotton wool below the high

plateaux until, dispersed by the rising sun, it disappears by mid-morning.

There are few trees to be seen except along the courses of some of the larger streams, more especially near the point at which they meet the Umgeni. Few wild animals are left in the Reserve. They have gone the way of the trees and the vegetation except among the bushes which mark the meeting of streams with the muddy river, where wild buck in small numbers still find cover. The hills are bare except for the flowering aloe and the occasional euphorbia, or "rubber tree". These alone escape destruction, for they are of little use as firewood. The grass is mostly of a variety indicative of overgrazing and an impoverished soil.

Many of the hills bear scars of deep erosion, known in South Africa as "dongas". These may reach a depth of 6 to 9 metres, as many metres in width, and may extend hundreds of metres. They are the result of unchecked erosion arising from a badly situated footpath or cattle track, or from bad cultivation practices.

The average rainfall is 889 mm, distributed fairly evenly over the seven months from September to April, with a tailing off in April and May (Fig. 4). Storms, accompanied by thunder and lightning in these rainy months, are extremely sudden and can be severe. It is not unusual for 75 mm to 100 mm of rainfall to be recorded in any one storm. Rainfall between the months of May and September is both infrequent and meagre and drought is a frequent occurrence.

Prevailing winds are light to moderate and north-easterly, from the Indian Ocean. South winds usually bring rain. Cold weather comes in with the west winds blowing off the Drakensberg mountains, mainly in the winter months. Excessively hot and dry winds from the north have a withering effect on the crops and may occur once or twice a month during the summer. They seldom last for more than a day at a time. They are usually followed by an anti-cyclone from the south, bringing rain.

Frost is infrequent and then found only in the subsidiary valleys and low-lying vleis. Summer, however, rarely passes without at least one severe hailstorm, which leaves its mark on crops.

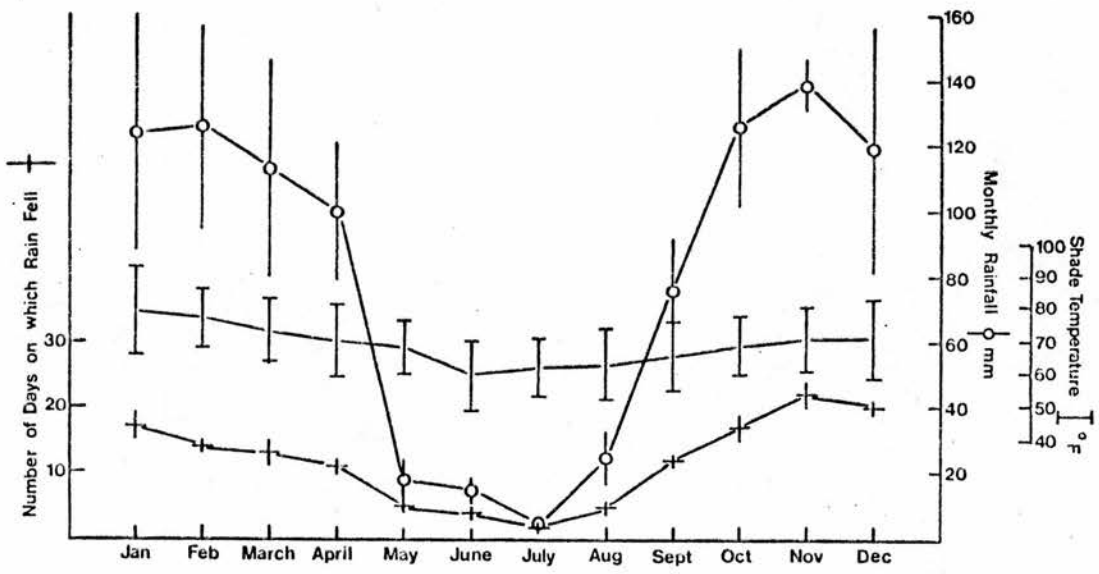

Fig. 4 Monthly rainfall and number of days on which rain fell (mean ± SEM) and shade temperature (max and min) recorded at Botha's Hill Health Centre between 1954 and 1958.

Rainfall in the Valley is adequate during the months November to April but declines precipitously in

May, so that the winter months are dry. Since, as shown in Fig. 4 , there is relatively little increase in the number of days on which rain fell, during the period of increasing rainfall (October to November), it is evident that the increased precipitation is due mainly to a greater volume per day. It is these summer storms which cause much damage due to erosion of the topsoil on the sloping hillsides.

Communications

The main artery of this south-eastern portion of the Valley of a Thousand Hills is a gravel road known as the Zulu Reserve Road (see Fig. 1, p. i; also Appendix A p. 181). This road follows a circuitous route from Botha's Hill through the hills, with numerous precipitous drops on either side. Gradients are severe and the surface is rough and rocky, owing to the heavy summer rains which frequently render it impassable. Paths wind their way through the hills to join this main access road. These are nothing more than rough grassy tracks, and can only be negotiated safely on foot.

Transport is very inadequate and unreliable. Only two medium-sized African-owned buses and eleven taxis are said to operate in the area. Few buses appear to survive the bad roads for long. Much travel is done on foot and it is not unusual for women and children to walk for many miles over this rough terrain before reaching the nearest dependable transport, which would be either the train or railway bus at Botha's Hill, on the periphery of the

Reserve[1].

The population is a rural one. There are no industries or individually-owned farms, no towns or villages in the Zulu Reserve. The people live in scattered imizi (homesteads, usually known as "kraals" in South Africa), composed of anything from one or two to ten huts, which are a characteristic feature of the landscape.

THE PEOPLE

How the area came to be settled

The people living in the Valley of a Thousand Hills are relative newcomers to the area. The Nyuswa and Qadi (Emaqadeni), originally part of a larger clan group, the Ngcobo, lived in Zululand near the Tugela River until forced to flee from Shaka c.1825. After many vicissitudes they entered and settled in the broken country of the Valley, then empty of people but teeming with wild life. Mgabi, their leader, built his capital in the Amabedlana Hills (Appendix A, p.181). Their occupation of their present area was later confirmed by Shepstone, to whom fell the task of allocating land (Reserves) to the returning remnants of peoples scattered by Shaka and Dingane after their defeat by Boer and British. The Qadi had separated from their seniors, the Nyuswa, while both were still in Zululand, but in their turn had been forced (by Dingane)

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[1] The term 'the Reserve' which is constantly used in these pages refers, unless otherwise indicated, to the area occupied by the Qadi (Emaqadini), Nyuswa, Ngcolosi and Embo, closest neighbours of the Botha's Hill Health Centre and Valley Trust (Appendix A, p.181)

to flee into Natal, where they sought asylum from their Nyuswa kin and were given a piece of land to occupy, near Botha's Hill. The Ngcolosi, also originally from Zululand, came to settle in the area they now occupy from a previous settlement further to the west. (Vilakazi, A., 1961; Bryant, A.T., 1965).

Whites moved in to occupy the plateau above the Valley a good deal later, in 1880, in order to establish a half-way stop for stage coaches travelling between Durban and Pietermaritzburg. Not long after, a group of Indians settled in a small area in the south-eastern extremity of the Valley, adjacent to the Reserve. These latter have influenced the diet of the Zulu of the Valley, being responsible for introducing rice and a taste for chillies, curry and other condiments as reported in studies of Zulu diet in the Valley made in the early 1950's.

It is important to outline briefly some of the main features of the traditional Zulu culture of the area, more especially aspects which have a bearing on health and disease, because not only do traditionalists comprise about 30% of the population today, but traditional customs and beliefs come unexpectedly to the surface in times of crisis, even among those who are Christian and educated, forming a pervasive background in the lives of all.

Subsistence

Predominantly a cattle-oriented people, the Zulu practised a mixed economy of cattle-keeping and hoe-culture. Until recently the mainstay of their diet was

amasi (thick curds of milk), often mixed with wild spinaches of various kinds or prepared into palatable dishes with pumpkin or maize. The Zulu planted also cereals of various kinds, legumes, groundnuts, tubers and several kinds of gourds. Beer, made chiefly of sorghum in the old days, but now mainly of mealie meal, is a healthful and nutritious beverage and, considered in the light of the quantities consumed, its anti-scorbutic value is high. Meat did not form part of the everyday diet but was confined to tribal and ceremonial occasions; there were, however, several kinds of edible caterpillar and when the Valley was first occupied, game was plentiful. Fish was not eaten by this inland peole. (For a useful account of traditional Zulu diet see Bryant, A.T., 1949, pp. 64-95). Zulu diet was wholesome and well-balanced. The general health and physical stamina of this people is demonstrated in their military exploits and their fine physique, as depicted by nineteenth century writers and artists.

Extended family and kraal

A well-marked feature of the landscape was, and still is, the umuzi or kraal, composed of a cluster of huts (round a central cattle enclosure in the old days). The traditional beehive hut though picturesque was not free of pests, but neither was it unhealthy, for the neatly woven grass over a framework of saplings, from which it was made, allowed of slow ventilation. The hard floor, made of a mixture of antheap and clay beaten hard with

stones, was kept well smeared with fresh cow-dung several times a week. Cooking was done on open fires on hearth-stones on the floor or outside in the open.

Within the umuzi lived an extended family composed of a man, his wives (Zulus are polygynous) and children; his married sons, their wives and children and perhaps a stranger or relative that had sought refuge in that home. Today there are few extended family dwelling units, owing to increasing monogamy, modern individualism and the spread of Christianity, with its emphasis on the simple or nuclear family.

Within the polygynous family each wife forms an independent unit known as a "house", with its own fields to cultivate for its own use and special cattle allocated to it. There is no individual ownership of land, but rights to the use of fields allocated to a married woman for cultivation are inherited by the sons of her "house". Property of one "house" may not be used by the husband for the benefit of another without creating an inter-house debt. Ties between uterine brothers and sisters are very strong as compared with those between half-brothers. When a kraal breaks up, usually after the death of the old father or grandfather, the segments which move out are usually "houses" composed of each of the surviving wives, her married sons with their wives and children and any unmarried children of the deceased kraal head. The eldest son in each segment becomes head of the new unit.

Within the family and in the society as a whole there is great respect for age and seniority (even Zulu

regiments were basically age-groups). A system of kinship nomenclature, the classificatory system, (whereby brothers of the father are called and treated as 'big' or 'little' fathers, according to age, and mother's sisters 'big' or 'little' mothers, while all the children of father's brothers and mother's sisters are regarded as one's brothers and sisters) assists in ordering the kin and holding the society together. The Zulu are strongly patrilineal. A married woman becomes very fully absorbed into her husband's family and remains a minor in law all her life. Decision-making is in the hands of the husband; a wife may not, even today, consult a doctor about a sick child without the permission of her husband or that of his parents. Only close kin can be responsible for nursing the sick; an outsider would be suspect as a possible witch. Among Christians, with their small families, the position is different. Here fellow-members of the church extend assistance in cases of sickness or death.

The extended family in Zulu society is the pivot on which rests one's security in life and though it is disappearing, its values still permeate the whole society. It is within the extended family that the aged, the infirm and the sick are cared for. It is the duty of every son to look after his aged parents, especially his mother. Widows and orphans are provided for by the customs known respectively as levirate and sororate, whereby the deceased husband's brother becomes responsible for the widow and children and, in the case of a young widow, raises seed to his dead brother; and, when a woman dies,her younger

sister or brother's daughter may come to take her place as wife and mother. Christian teaching has undermined the security of widows and children by condemning the levirate and forbidding it, and often today widows are forced to go to town to work in order to feed their children. Shortage of fields and low wages also operate today against the institution and in general render it difficult for the family to carry out its responsibilities to the aged and infirm. The family as a group is given great recognition in the work of the Health Centre and The Valley Trust.

The Zulu have a well developed clan system. Each clan has its special clan praises and a clan anthem (ihubo). Cattle, inherited from father to son, are regarded as so closely related to the clan ancestors that one may not drink the milk nor eat the flesh of cattle belonging to clans other than one's own. Marriage within one's own clan is not permitted. It is one's duty to extend hospitality to any clansman.

Values and practices in connection with children

A striking characteristic of Zulu society, one that has been extensively exploited in the nutrition education programme of the socio-medical project, is the great value placed upon children. Children are loved and prized in Zulu society, not only for themselves, but also because of what they mean to their parents in other respects, viz., their social and economic position, their political prestige, their welfare in the after-life. In a society in which disease, epidemics, a high infant

mortality rate, warfare, drought and famine operated together to keep down the size of its population, men were sensitive to the importance of human fertility and the value of manpower. Children provided light labour and even today assist the family. Boys herd cattle, girls gather firewood and wild spinaches, help in the home, nurse young brothers and sisters. A woman is fulfilled only through her children and looks forward to the services of a daughter-in-law to lighten the burdens of middle and old age, when her son marries a wife. A man needed a large kraal for prestige, as a labour force and as followers in any political career. Above all, he needed sons to sacrifice to him[1]. Without progeny he would be in a deplorable state of hunger and neglect in the after-life. To a Zulu woman childlessness is the greatest of all misfortunes. Fear of childlessness is so great that there are many instances of false pregnancies among the Zulu. Every Zulu girl before marriage should undergo a ritual that renders her fertile (ukwemula) but this is sometimes neglected for various reasons. Cases of barrenness, or the death of children, are sometimes attributed to ancestral anger at the failure of a woman's father to sacrifice, on her behalf, in a ceremony of this nature, and steps are then taken to set the matter right. Very often misfortunes, such as barrenness or loss of children in infancy or childhood are thought to be caused by witchcraft, as the following case we came across illustrates:

> There is a family in the Valley in which there were seven children. Two have died from what appears

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[1] The Zulu, like the Chinese, have an ancestor cult.

to have been congenital megacolon. One of the younger survivors has the same condition. The husband reached Standard VIII and is a respected and independent trader in the Reserve. His wife is an ex-school teacher who reached Standard VII and then spent three years on a teacher's training course. They are both devout Christians and she is a daughter of an American Board Mission evangelist. They traced the illness and loss of their children back to the occasion of their marriage, when two oxen were slaughtered (this is customary even at Christian marriages) and it was found, with dismay, that the offal of one of the oxen had been stolen. The significance of this theft was understood by all the guests: someone was determined that the bridal couple should have no children. The offal would be used by the sorcerer in some evil rite designed to blight the marriage and leave the couple without living progeny. It is generally considered by their friends that it does this couple and their Christian faith much credit that they have managed to beget a family at all, but it would be too much to hope that the children could survive. This theory is accepted with resignation by the couple despite their education.

There are many traditional observances to ensure the safety of the unborn child. The pregnant woman is usually given medicine which she must continue to take until the child is two or three months of age. She must avoid walking on much-frequented roads or too far away

from home, for roads and footpaths are places where one picks up all manner of evil and misfortune from charms planted by evil-doers. At the birth only women past child-birth may be in attendance. The placenta and umbilical cord are buried under the floor at the back of the hut and the hole carefully concealed so that enemies cannot locate them and use them to gain power over or harm the child. This belief was once a source of great anxiety and difficulty in the maternity wards of hospitals, but was eventually overcome by incineration, which satisfies the families. Little information is available on former traditional breast-feeding practices in the new-born. From discussions with elderly Zulu women, it appears that whereas the normal practice was to give the child the breast soon after birth, it was not uncommon to delay a day or two in the belief that breast milk was harmful.

Mother and child are isolated after the birth, usually until the umbilical cord drops off, to keep the child safe from evil influences and because the woman is unclean. The mother is given carefully selected foods to eat during her isolation and abstains from <u>amasi</u> for two months after the birth. The father must not enter the hut or see the child at this stage. Before the baby is taken out of the hut for the first time it is strengthened to enable it to withstand the dangers of the outside world by being held in the smoke of burning medicines and charms. Sometimes incisions are made on its joints and the charred remains of the burnt charms rubbed in; or some may be put into its food or placed in

a container and attached to its necklace. The mother is purified after the period of isolation and the hut (which has not been swept since the birth of the child) must be thoroughly cleaned out. Beer is usually brewed to thank the midwives for their services and in the case of a first son a head of cattle may be sacrificed to the ancestors.

Certain Zulu practices are harmful to babies. To remove a constitutional taint which every child is supposed to have from birth and which is held to be the cause of several ailments, e.g., a disposition to eczema, or sexual irritation which causes lecherous inclinations in adults, the mother may thrust the stem of a castor oil (Cussonia spicata) leaf, or a stalk of fibre, high into the child's anus and twirl it round vigorously between both palms until, by scraping on the membrane of the bowels, blood is copiously drawn. This is termed isigweba. Another practice which also causes infinite harm to young children is the frequent use of enemas and the crude method of giving them through a reed. The liquid is blown from the mouth into the unfortunate child. This procedure is believed to eliminate evil influences from the child. "Smoking" is another lamentable practice which is said to serve the same purpose. The infant is held over the hot embers of a fire to which some special powder[1] has been added. Inhalation of the fumes quietens the child usually to a state of semi-consciousness, in which condition it

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[1] Judging by its effects this probably contains "dagga" (hemp or hashish: Cannabis sativa).

may remain for a day or two.

Traditionally Zulu babies are not weaned until they are two to four years old. Today, however, there are frequent cases of suspected witchcraft which make the young mother afraid to feed her baby and in this case breast-feeding is stopped at a very early age. This is the starting point of many cases of kwashiorkor. The long period of suckling was a method of spacing children and therefore of birth control, limiting natural increase of population. It also meant that long after a toddler was eating solid foods it had this supplementary source of nutrition, together with the warmth and security engendered by such close contact with, and attention from, its mother, at a stage when a child is beginning to explore the wider world but is as yet unsure of himself. It is a common belief that if the mother becomes pregnant again before the child is weaned it will become stupid and physically weakened.

Love-making plays an important part in the life of the traditionalist young man or woman. Inter-crural intercourse is allowed, but must be carried out in conditions strictly controlled by the group of girls and boys just older than the young couple. If a girl becomes pregnant before marriage this brings disgrace upon the whole group of girls who have to be purified of their defilement by means of the gall of a large goat provided by the boy's father. Today, with the breakdown of many traditional controls, especially among Christians, illegitimacy has become common. The child of an unmarried

mother belongs to its mother's family and takes the name of the girl's father.

Marriage involves not only the marrying couple but more particularly also the two families concerned. The passing of brideprice is an important aspect of marriage; without it a man does not obtain any rights over his children. Zulu marriage was very stable. Divorce was virtually unknown in traditional society.

Religion and health

Death is regarded as a transition from the world of the living to that of the ancestors, those great protectors of their living descendants. About a year after the death a head of cattle is slaughtered in order to "bring home" the spirit (which is believed to have been wandering about all this time) and to incorporate the deceased into the group of spirit ancestors who keep guard over their descendants. No evil can befall a person if only the ancestors are watchful enough; but if the living depend for their welfare on the dead, the spirits in their turn depend on their living descendants to make sacrifices to them. In addition to the ancestors, the Zulu believe in Unkulunkulu, a creator who, however, has remained remote and was never prayed to or invoked. Christians identify Unkulunkulu with God and some Christian sects believe the ancestors are intermediaries between God and man. There is also an impersonal power called "Heaven" or "Sky" that controls storms, thunder and lightning, while the Princess of Heaven is a daughter of "Heaven", a virgin goddess

representing the earth itself, who is fertilized every spring, in this way bringing the blessings of bountiful nature to man.

Religion in the form of the ancestor cult is closely associated with disease and its treatment. The ancestors (as we have seen) may cause illness; they are also the main channel through which it can be cured. It is important to look more closely at the main causes of disease, and the medical practitioners who cure it, in Zulu society.

Causes of disease and medical personnel among the Zulu

The Zulu accept certain illnesses as naturally caused. These are generally the milder ailments, for example coughs and colds, fevers and epidemics of children's diseases, such as mumps, whooping cough, etc. Simple ailments are dealt with by means of treatments, such as the drinking of infusions of herbs, inhalations, sprinkling with medicines, use of ointments (e.g., in curing ringworm), steaming, cupping or blood-letting, scarification and the rubbing-in of powders, etc. There were also techniques for dealing with sprains, the setting of a broken arm and so on. Anyone who knew of a medicine or treatment, might be asked for assistance and there were some who knew of, or had inherited from a parent, the knowledge of a number of medicines or treatments. Such a dispenser of simple remedies is called an *inyanga* (specialist), just as a worker in iron or a skilled doctor with years of training behind him is an *inyanga*

or specialist. Some women specialize in knowledge of babies' illnesses. Inheritance of knowledge and training are both important. There is much confusion in Zulu medical practice of what Whites would call magical properties and therapeutic properties in herbs and other substances; and in treatments, magic, such as "throwing out" of an illness or use of a scapegoat, is common.

Epidemics of children's ailments, which were associated with the coming of summer, were regarded as natural and seasonal and were sometimes warded off by an appeal through special rite and song to Nkosazana or Nomkhubulwana, daughter of "Heaven". This is done even today in outlying parts of the country.

There is much colour-symbolism in Zulu medical treatments, e.g., the use of plants with red sap for strengthening the blood. Blood is believed to be vitally important for one's health and well-being. This is one of the reasons why the injections of White doctors are popular today, another being their resemblance to scarification and rubbing of medicine into the blood. Many treatments form a cycle in which first "black medicines" (which may be red or another colour) for strengthening are administered to counteract the illness or evil. Thereafter, when the patient has recovered or the treatment is considered to have had time to act, "white medicines", which may be churned to become frothy, are administered, often as emetics, to cleanse or purify the system, rid the patient completely of the 'dirt' of the illness and its treatment, as well as the psychological

gloom or 'blackness' of spirit caused by the illness, and render him well, whole, good to look at and attractive once more.

More serious illnesses or illness that is not recognisable as one of the commonly-known ailments for which there are specific remedies, are attributed to two major causes or forces at work, viz., anger or displeasure of an ancestor or the activities of an umtakati (witch or enemy who hates one). A witch may use various techniques, such as poisoning, or 'throwing' medicines to reach his victim through the air, burying charms for the unsuspecting victim to walk over, employing familiars and a wide range of other techniques. The inherent powers of witchcraft may be inherited, but, in addition, anyone who uses medicines with evil intent to harm others is regarded as a witch. Placing poison in someone's beer is also the action of a witch. Many witches are believed to have been born with, or to have otherwise acquired, supernatural powers of flying through the air, calling up from the grave and enslaving the dead or using animals as familiars.

In dealing with illness the Zulu believe it to be essential to get at the root cause of the evil. It is no good treating symptoms without counteracting the source of trouble, whether it be ancestral displeasure or witchcraft. This can only be done through diagnosis by divination. The most important medical specialist is, therefore, the diviner or 'smeller-out' (isanusi or isangoma). The diviner is directly inspired or possessed by one or more ancestral spirits, so that he or she is able to diagnose

illness, locate and counteract witches, find lost or stolen objects. A diviner may confine himself to divination, sending his patient to a specialist (inyanga) in medicine for the curing of the illness. More usually, however, he combines his power of divination with knowledge of herbs and cures. Whatever the treatment or cause, it is always necessary, in case of illness, to discover whether the ancestors, as the main guardians or watchdogs, should be propitiated as well, simply as a precautionary measure in addition to other treatments. To become a diviner involves being called to the profession through long illness caused by the ancestor concerned and often lasting years. When all other treatments fail, it may be discovered that the patient is being possessed and must be apprenticed to a diviner to be trained, so that the possessing spirit can manifest itself withoug causing the person to be ill. This usually takes years, during which time the trainee lives with his teacher. The diviner who trains others, thus has a valuable labour force at his disposal.

There are types of divination other than direct inspiration by a spirit. The bone-thrower is not called to his profession but undergoes a long training in reading and interpreting the positions in which his set of divining bones fall. But the most spectacular and highly esteemed type of diviner is the 'smeller out'. Some diviners employ techniques of ventriloquism, the spirits talking from the roof of the hut. A type of practitioner that is not so common nowadays as a separate class of doctor is the sky-

doctor or heaven-herd, the man who wards off lightning and storms. He is a magician called to his profession by some manifestation towards him of the special favour of 'heaven' by perhaps some narrow escape from lightning. Then he undergoes a period of training to become 'at one with the sky' at the hands of some other lightning specialist. Such a doctor would often go out during a storm and harangue the lightning, telling it to depart and go elsewhere. He treats patients struck by lightning and protects people's houses and kraals from being struck.

When a patient or his relative consults a diviner he expects the diviner to know, without being told, exactly what the symptoms are and the nature of the illness and then to diagnose the cause of the trouble. The Zulu has little faith in the doctor who has to ask the patient what his "complaints" are. In many cases the diviner does not see the patient at all, but is consulted in his own home by relatives of a patient who may be far away. In this case the diviner is expected to tell his clients also who the patient is, his sex, age and other particulars. As White doctors appear to confine their attention to dealing with the symptoms of the illness the Zulu sees it as only logical that he should consult a diviner as well, when being given Western treatments.

The Zulu diviner is often very successful in his treatment of mental illness. In such cases the patient lives for a period with the diviner and often returns home fully cured to all intents and purposes, able to take his place once more in society. In some cases mental

instability or sickness leads to training as a diviner.

It is of the utmost importance for the orthodox clinician working amongst the rural Zulu, indeed the urban Zulu as well, to keep in mind their very deeply rooted acceptance of the life hereafter and the continuing influence of departed relatives. The confidence placed by the Zulu in the diviners is exlusively based on this conviction and furthermore, that they can be assisted in their work by the spirits of their ancestors. The ancestors are considered to be the source of all their knowledge and ability: the whole isangoma profession is based on this belief. It is on this ground that diviners are considered capable of explaining the intentions of ancestors, of exposing witches and sorcerers, of solving problems concerning thefts, of tracing lost objects and strayed cattle. Diviners are respected members of the community, the protectors of society against the criminal activities of evilly-disposed people and born witches. It is to them that men turn in time of distress and trouble. Diviners have influence and can become valuable allies in the promotion of health, as has been revealed in the development of the nutrition education and agriculture programmes of The Valley Trust.

CHAPTER III

SOCIAL AND ECONOMIC CONDITIONS AND DIET IN THE VALLEY IN THE MID-TWENTIETH CENTURY

The picture presented so far is that of a people who had fled from tyranny and come to rest in a rugged land which afforded some security against enemies. Their needs were simple and few; they had an ordered social life, their diet was well-balanced, their economy was a self-sufficient one at subsistence level. The presence of British settlers in Natal from about the middle of the 19th century was destined, however, to affect very deeply the lives of these people, for within a hundred years the country had developed into an advanced modern state and the Durban-Pinetown industrial complex had been brought to the very doorstep of the Reserve. To appreciate the condition of the people in the Reserve at the time the socio-medical project was launched in 1951, it will be necessary to examine very briefly the nature of some of the changes that had taken place in the Valley by the middle of the 20th century. For the analysis which follows, reliance is placed on personal observation and experience in 1951 and the following years; on research, both published and unpublished, carried out by individuals or departments of the University of Natal either at the instigation of The Valley Trust or as the result of the close liaison between the University and The Valley Trust in research relative to the area; and, furthermore, on the

Pilot Health Study (WHO Report) carried out by the author in 1958 (Stott, 1959), Section 2 of which is attached as Appendix A (pp. 179-236).

Major forces for change, ideological and economic

The major influences making for change from the traditional way of life of the Zulu may be subsumed under two main headings, ideological and economic (including demographic change, so often associated with economic factors). The ideological impact on the Zulu way of life began with the teachings of the first Christian missionaries, and continued to operate with ever-increasing momentum through education in the schools which they instituted. Christianity and western-type education, by introducing a new philosophy of life, operated to undermine the whole system of values of the Zulu and affected almost every aspect of their lives. These forces undermined even the Zulu family by their emphasis on individualism and their insistence on the independence of the small, nuclear family of husband, wife and children. Christianity thus unwittingly set into motion potentially disruptive forces capable of undermining the very foundations of Zulu culture. Of the forces classified as economic, most important were probably demographic change, on the one hand and, on the other, the twentieth-century industrial revolution which was greatly promoted, inter alia, by two world wars, which generated a demand for locally manufactured goods and military equipment. This industrial development created a need for labour for the rapidly

expanding Durban-Pinetown-Pietermaritzburg industrial complex, a demand which was met largely by the African sector of the population among whom were also the people of the Zulu Reserve. The transition to a wage-economy had begun.

Differentiation of the population

The immediate effect of Christian teaching on the Zulu was to create a division in people's loyalties. Religion divided Christians from heathens in every aspect of life and a gulf began to develop between them. Christians adopted Western habits (even in eating and family manners, e.g., sitting at a table and substituting individual portions for a common bowl shared on mats on the ground). By 1950 the population of the Reserve had become sufficiently differentiated for Vilakazi (1962, p. 142) to distinguish three groups:-

1. The uneducated, traditionalist, comprising about 40% of the population (amabinca - those still wearing tribal dress)
2. The Christians, members of churches (amakholwa - believers), forming about 10%
3. The people who fall between, "a floating element of misfits who are neither truly traditionalist nor Christian", called amagxagxa in the Reserve and forming about 50% of the population.

The Christian group genuinely endeavoured to lead a Christian life. Because of the on-going process of conversion, all Christians were not necessarily educated; but they formed an educated, Westernized élite, holding better employment, enjoying a better economc position,

having a better understanding of Western ways, and above all able, because of their literary skills and knowledge of English, to use the opportunities that came their way to greater advantage than any other group.

There has never been a Christian mission operating in the Reserve. The Christians were therefore a small group without the influence a mission station would have brought them.

All the major orthodox churches were represented, together with a number of what are known as African separatist churches. (For a list of churches and sects see Appendix A(a) 9.2, p. 191). It is interesting to note that orthodox church membership far exceeded that of separatist sects. They formed 71% of all Christians.

The population explosion, purchased food and a wage-economy

The most significant feature of the Reserve in the mid-twentieth century was the density of population and consequent shortage of land for grazing and agricultural purposes. It must be remembered that the physical character of the Valley of a Thousand Hills was not suitable for large herds or for farming, and thus an increasing population would naturally soon outgrow the area's carrying capacity for cattle and crops. In the 60 square miles (155 km^2) with which the socio-medical project was mainly concerned, the density of population was estimated in 1958 at 560 to the square mile (2,59 km^2) (Stott, 1959, p. 81).

Associated with this had been two significant

changes in the diet of the people. Firstly, livestock had been so reduced in number that by the time of the 1958 Survey only 29,7% of households had any cattle at all and those cattle that could still be found gave very little milk (Appendix A(a) 7.15, p. 188). Possibly the 1896 rinderpest had been the first serious blow to cattle-keeping, but lack of grazing was probably a major operating cause in the twentieth century. (There were no goats and only 57% of households kept fowls). As a result of all this, amasi, the Zulu mainstay, had been entirely superseded as staple food by maize products. The second change was that, owing to the inadequacy of land available for cultivation to supply the needs of the greatly increased numbers, people now depended mainly on food bought from the stores. They still planted maize, but yields were so low that most of the crop was eaten green on the cob. Money to buy food came from wage-labour. The position was, then, that not only had the dietary pattern changed, but a major revolution had taken place from a self-sufficient economy to a wage-economy. The implications of these changes for nutrition are more fully discussed below.

There were diverse factors operating to bring about the phenomenal increase in population, such as natural increase which followed the dying out of the traditional spacing of children, elimination of tribal wars, raids and major epidemics and improved environmental services. More important than these, however, was a steady influx into the Reserves owing firstly, to rationalization in farming in the White sector of the population with

consequent removal from the farms of excess labourers and their families and secondly, to the large number of industrial workers from areas all over Natal seeking, through the influence of friends and kin, to establish their families in the Reserves nearer to their places of work in the Durban and Pinetown areas. Population movements are natural concomitants of an industrial revolution; but in the case of the influx into the Reserves the flow to the cities was being diverted into nearby Reserves owing to regulations preventing the movement of African families into urban areas. This influx into the Reserves has been further accelerated since 1950 by more stringent influx control measures and the back-to-the-Reserves policies of the White political party in power.

The wage-economy of the Zulu Reserve was of a special type viz., one based on migrant labour with week-end commuting, made possible by close proximity to Durban and Pinetown. Most people came home once a fortnight or once a month. This system had introduced problems in the community. Week-ends had become transformed into holiday occasions, for which beer or home-distilled liquor was considered essential. Wives complained that their husbands spent too much of the week-ends in the company of friends at beer-drinks and neglected home responsibilities and obligations.

Occupation and income

What were the occupations and earnings of this labour force of the Reserve in the nineteen fifties? The 1958 Family Survey indicates a fair variety of occupations ranging from teaching and the ministry, factory work, unskilled labour of various kinds to traditional herbalist. (Appendix A(a) 5, p. 183; also A(b) 11, p. 210). By far the majority of workers were labourers. Of the 171 male individuals shown gainfully employed, 115, i.e., 68% fell into the category of unskilled labourers (p. 210); the remainder were thinly scattered over a variety of occupations. There was no other large category: 6% were in domestic service; 5% were salesmen and related workers; 7% fell into the category of teachers and ministers.

Income was very low indeed (Appendix A(a) 8, p.189):

38% of family heads had an income under £100
76% of family heads had an income under £200
91% of family heads had an income under £300
9% of family heads had an income over £300

Mean income was £151 p.a.; lowest income recorded £18; highest income £770. Poverty in the Reserve was thus of some magnitude.

A very high proportion of the total adult male population was engaged in gainful employment: 80% of <u>all males</u> over 20; 75% of all males over 15 years of age. These are extremely high percentages when one considers the number of aged and infirm that must have formed part of these two groups. The vast majority of these workers were week-end migrants (Appendix A(a) 6.1, p.184 and Appendix A(a) 10, p.209).

There had been no developments in the Reserve in the way of industries or towns, nor had there been any improvements in roads or the amenities of life. Apart from a limited number of home-crafts (such as beadwork, basket- and mat-making, fashioning of spears for dancing) and the profession of teaching, the only sources of income within the Reserve were the sale of home-distilled liquor made by the women and the sale of hemp (Cannabis sativa, called "dagga" in South Africa). It was a common practice in 1951 also to sell cattle manure to Whites on the plateau, but this soon ceased under the steady pressure of Health Centre and Valley Trust propaganda against a practice which so greatly reduced the fertility of the soil.

The migrant labour system, then, was depriving the Reserve of the bulk of its labour force, but virtually nothing was being ploughed back into the development of the area in which the labourers and their families lived. Furthermore, women had also begun to go out into employment in the urban centres. By 1958, 23% of all women fifteen years of age and over were gainfully employed, 68% of them in domestic service (Appendix A(b) 11, p. 210). Most, but by no means all of these, were under thirty years of age (Appendix A(b) 10., p. 209).

Social Welfare Services

The bulk of the population of the Valley in 1950 was by modern standards very poor. What sort of assistance were those who were old or incapacitated receiving? Under

Zulu custom, as has been explained, the extended family provided for widows and children, for the sick and the needy. In a society living at subsistence level, this is only possible if there is sufficient land by which to live. For example, the widow herself had to be in a position to cultivate a field for feeding her children. Moreover, in traditional society children were an asset, because of the services they could provide, even when young. There were no school fees to be paid or books and clothing to be bought for them. By 1950 the extended family was rapidly disappearing making way for the individual family, which clearly could not provide such services. Modern social welfare services for Africans were in an early stage of development. Very few grants to widows and children were being paid in the Reserve in 1958. Old age pensions were available for men at the age of 65, women at the age of 60, but they were inadequate and furthermore, there was considerable difficulty in establishing ages in an under-developed society without written records. There were disability grants available from the State on medical recommendation for those of any age who were unable to earn a living by reason of illness or disablement lasting for a year or more, but many had never heard of this, having never come near a White doctor. In the 1958 Family Survey it was found that 21% of the families were in receipt of some form of financial assistance (Appendix A(a) 8.3, p. 190). No families participated in any form of health insurance.

General educational level

An important factor in the low wage-level and poverty of the people in the Reserve was their low educational level and lack of the skills needed in modern society. In 1951 there were seven primary schools in the area, of which three were Roman Catholic, one Methodist, two Lutheran and one American Board Mission. None were State or community schools. In 1955 four of these schools were taken over as community schools and fully subsidized by the Government. Only the three Roman Catholic schools remained as they were, privately owned and entirely self-supporting.

The highest standard of education provided in these schools was Standard VI. The lower primary schools had four classes, ending in Standard II. Higher primary extended from Standard III to Standard VI inclusive. There were, and still are, no secondary schools and aspiring students have to go to Durban or Pietermaritzburg or even Johannesburg or Zululand.

No educational institutions exist in the area for children who suffer from blindness, deafness or any physical or mental disorders. Children start school at about the age of seven but education is not compulsory. Without a reliable population census it is impossible to give an accurate figure of the percentage attending school, but it was assessed roughly at 40 percent in 1958. Owing to the shortage of vacancies in the overcrowded schools, absenteeism from school does not constitute a problem.

The keen desire for education is indicated in the following record of attendance at the Nyuswa school in 1958:

Quarter	Average enrolment	Average attendances	Average absences
March	403	397	6
June	399	392	7
September	371	363	8
December	371	365	6

There is great competition for vacancies and children are not easily kept away from their lessons. They are extremely stoical and it is a common occurrence for a child to arrive at school with a very high temperature and quite obviously ill.

A disquieting feature of education in the Reserve (and this is general for Africans throughout South Africa) is the low level attained before leaving school. In the 1958 Survey of 155 families, 65% of persons over 16 years of age (excluding those still continuing their education) had reached no higher than Standard II; 89% had reached no higher than Standard VI; only 8% had gone further to reach Standard X; 3% were teachers, not all of whom had reached Standard X level, while 28% of persons had received no schooling at all (Appendix A(b) 13.2, p. 213). It is probably safe to say that at least 40% of the children in the Valley as a whole received no schooling worthy of mention. This does not, however, reflect the degree of literacy, which was a little higher.

Judging from the experience of those working among

Note: For additional information on education refer to Appendix A(b) 13., p. 212.

the people in the area,the percentage of literacy appeared to have been in the region of 55 percent, through the medium of Zulu, and 25 percent, through the medium of English. The Health Centre Community Liaison Officer who was Chairman of the area School Board, assisted in the collection of data for the WHO Report. He moved extensively in the area and conducted many thousands of interviews. He therefore had an excellent opportunity of assessing the situation. He explained the comparatively high rate of literacy in Zulu by the fact that many men working in the towns attended night classes. He estimated also that there was a possible 5 percent literacy in Afrikaans.

Some of the tribal Zulu and also those in the marginal group were opposed to formal education for their children. They saw few benefits from it and said education encouraged children to lose interest in their home and environment and as soon as they had reached a certain standard of education they left for town where, as often as not, they became lost to their family.

Housing conditions, sanitation and health

Very few traditional beehive huts were to be seen in 1951. The majority of people lived in thatched, wattle and daub rondavels with one or two small windows. Five or six people sometimes slept under the same roof and ventilation was far from adequate.

The life of these structures is very short because of the destructiveness of termites. A certain amount of

ventilation comes from the gap between walls and thatch which is left, not for ventilation, but to discourage termites from gaining access to the timbers and thatch. The torrential rains in the summer months frequently do considerable damage to the earth walls.

Rectangular houses built on the same wattle and daub principle but having corrugated iron roofs, instead of thatch, were beginning to make an appearance. They are far from picturesque but they are more amenable to division than round huts and give the family separate bed- and living-rooms. A separate hut, generally a rondavel, is frequently provided as a kitchen and informal living-room. The Christians and more educated Zulu were acquiring western-type furniture in 1958. By 1976 there were many better-built western-style houses, belonging in many cases to the immigrants coming in from outside.

Living conditions were (and still are) on a primitive level. There was no water-borne sanitation, only perhaps a pit-privy on the periphery of the kraal. In the 1958 Survey 41% of the families had pit-privies, 59% no sanitary arrangements. The hillside was there and the convenient bush. Only too often the bush was near a water-hole or running stream.

The following figures further reflect the standard of living in the mid-twentieth century:- in 94% of the families water was obtained from running streams. In 86% of the cases heating or cooking was provided for by open

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Note: For additional information on housing and sanitation, refer to Appendix A(a) 7, p. 185.

fires on the floor of the hut, wood being used as fuel in 84,5% of these cases (Appendix A(a) 7.10, p. 187). In over 99% of the cases no hot water was available (Appendix A(a) 7.12(b), p. 188), while in 88% of the cases bathing facilities took the form of galvanised iron baths (Appendix A(a) 7.12(a), p. 188).

As the subject of health is discussed in Chapter V, relating to the Health Centre, only a few comments on health are needed here. The Reserve was in 1950 without medical services other than those of the traditional herbalist and diviner, except for the vaccination tours of the health assistants from the Department of Health in Durban and the infrequent visits of the district surgeon, chiefly on medico-legal and communicable disease matters. There was no health education of any kind; nor services in First Aid, nor State-provided care of the aged. Among the prinipal causes of morbidity, according to the 1958 Family Health Survey, were: upper respiratory infections, malnutrition, infantile diarrhoea and gastro-enteritis, worm infestation, impetigo and other local infections of skin and sub-cutaneous tissue. (See analysis p. 95, also WHO Report 1959, p. 83). Of the cases attending the Health Centre 99,4% had been vaccinated (Appendix A(b) 15, p. 220). Since malnutrition was rife in the area, it is desirable to examine briefly the nutritional situation in 1951.

Soil husbandry and food production in 1951

The population explosion in the Zulu Reserve which

has been discussed above had not been accompanied by any improvement in agricultural or cattle-keeping techniques. By the middle of the 20th century deforestation, over-grazing, careless placing of footpaths, destruction of wildlife and vegetation, constant burning of grass, mis-use of the soil and bad drainage were together reducing the land to drought and desert conditions. Soil erosion and the resultant loss of soil fertility was one of the most potent factors associated with malnutrition in the Valley. By 1951 food production had become disastrously low. The bulk of the homes had no milk at any time of the year. The few cattle that there were, remained permanently in poor condition, with very low milk yield. No winter crops were attempted, not only because of lack of water in the dry season but because of the traditional practice of allowing cattle to roam unherded during the winter months to graze in the reaped fields. It was regarded as anti-social to erect fencing to protect property from roaming cattle, because land was not privately owned and the community as a whole had a right to graze cattle on any uncultivated or reaped fields. In winter, spring and the early summer months there were, therefore, virtually no fresh vegetables to supplement the predominantly refined maize diet. Absence of menfolk as migrant labourers had also led the over-worked women at home to cut down drastically on their collecting of wild edible foods and on the variety of crops cultivated. Any crop troublesome to grow tended to be discontinued. People concentrated on growing the more filling foods - maize, potatoes (which

had become very popular), Egyptian taro, pumpkin and, to a small extent, legumes.

Whatever the multiple social, cultural, economic and environmental factors that underlay poor food production, the Valley, as indeed many similar areas in the Republic held, in the author's view, an under-exploited and wasting potential for foods of high nutrient value, such as legumes, groundnuts, fresh vegetables, fruits, fish and poultry that could make a considerable contribution to the health of the people. It was this aspect of the situation that The Valley Trust seized upon in its decision to encourage, as a health measure, intensive domestic vegetable gardening, poultry keeping and fish culture.

From traditional diet to refined and processed foods

The traditional Zulu were, as has been indicated, a healthy people whose mainstay amasi, supplemented by a wide variety of foods and crops, afforded a well-balanced diet except in time of severe drought. Zulu methods of preparation of food, too, were sound. Maize was prepared in a variety of ways but used always in unrefined form, whether whole or ground. The latter was achieved by grinding the dry grain between two stones without removing either husk or germ. Whatever method was used traditionally to prepare the grain, such as grinding grain previously soaked in water to facilitate the removal of the husk, or stamping it to make samp (grain with husk removed), relatively little of the nutrients was lost

in the process.

Apart from various porridges made from mealie meal and samp, many nutritious maize dishes incorporating legumes and vegetables were prepared. Grain removed from the dried mealie cob and boiled whole (inkobe) provided the basis of many valuable dishes in which dried legumes, peanuts (Arachis hypogoea) and wild spinaches were included in varying combinations. These dishes were particularly valuable, especially in respect of vitamins of the B group and the quality of protein. A non-alcoholic drink, maheu, basically fermented soft porridge, and Zulu beer (utshwala), prepared from mealie meal and sprouted mabela (Sorghum vulgare), were standard beverages.

As families became more and more dependent on the trading store for food, it was inevitable that there should be a transition from unrefined to refined foods. Ignorant as he was of the importance of food for health, the Zulu had no option but to accept the refined and processed products easily obtainable at the trading store, notably the nutrient-deficient, refined maize products (sifted mealie meal, samp and mealie rice), white flour products, commercial sugar, tea, curry and condiments. The situation in regard to the use of highly refined foods in 1958 is clearly indicated in a table (see Appendix A(a) 11.1, p. 193) from which it can be seen that 130 out of 155 families consumed maize or maize products six days a week while 136 as frequently used sugar and 104 tea. The histograms (Figs.26 & 27) paint a similar picture. These highly refined foodstuffs, endowed with prestige value by

commercial propaganda, kept well and were palatable, filling and relatively inexpensive.

Maize dishes in the Reserve in the 1950's and today remain much the same as they were in traditional times but, due to refining processes they now lack their former nutrients. Some idea of the loss in food value resulting from the change from the use of 'whole grain', or unrefined mealie meal in favour of sifted mealie meal, can be gained from the following comparative analysis. This reveals that unsifted mealie meal in preference to the sifted product ensures per unit of weight:

a 3.3% increase in protein;
a 40% increase in fat;
a 25% increase in calcium;
a 19% increase in phosphorus;
a 31% increase in iron;
a 317% increase in thiamin;
a 300% increase in riboflavin;
a 100% increase in niacin.

(Information obtained from State Department of Nutrition, Pretoria)

Commercial sugar as a sweetening agent and energiser has been responsible for the displacement of much highly nutritious food - e.g., '<u>inkobe</u>' - and vegetable dishes have given way to the very popular, soft, unfermented, sifted mealie meal porridge eaten with much sugar. This is simple to prepare and gives satisfaction and ready energy.

Other changes towards a disproportionate consumption of refined carbohydrates by 1951 were the substitution of white flour for unsifted mealie meal in

the preparation of the popular dumpling; a decrease in the use of peanuts, formerly popular for their fat content in food preparation; marked decrease in the consumption of fresh milk and amasi due to scarcity of milk-producing cattle, along with a marked increase in the consumption of sweetened condensed milk; an increasing use of white flour in a variety of sifted mealie meal dishes, including the ever popular 'scones' fried in deep fat; increasing use of white bread, which had gradually become a staple food of the "urbanized" migrant worker; increasing use of white sugar, used by every member of the family and by all families, and, inevitably, sweets, synthetic cool drinks, biscuits, cakes and buns which, like sugar, tend to be used unwisely and displace more wholesome food.

Preparation of food had traditionally been mainly by boiling, steaming and occasionally by baking or roasting in the embers of an open fire. Little nutritive value was lost in preparation. The standard daily source of protein was mainly from legumes, greens and milk. By 1951, however, new methods of preparing food and new dishes had been adopted, which were deleterious to health.

Frying (ukuthosa), as its derivation from English "toast" indicates, was a modern innovation which was very prevalent in the early fifties, more especially in the advanced, Christian group, who used saturated fats, mostly dripping, extensively for the purpose. All stews and curries were begun by frying onions as a base. The more advanced sections even fried spinaches, cabbage and beans in dripping, with onions, tomato and chillies added, after

first having boiled them, thus destroying most nutrients.

Infant feeding

Significant for the health of the people of the Valley in 1951 was the change that had taken place in infant feeding. The long period of breast-feeding, traditional among the Zulu, was giving way to artificial feeding, with deleterious effects on the child. Supplementary feeding was begun at an early age (Appendix A(b) 17., p. 222), the more popular supplementary food being home-made incumbe, a watery gruel of fine, sifted mealie meal or amabele (Sorghum vulgare) fed to infants from feeding bottles (Ibid. p. 223). Mealie porridge was also commonly used and even sugared water.

Traditionally the infant was given the breast from the outset and, apart from a little water from the palm of an attendant's hand soon after birth, to test its swallowing ability, no supplements whatsoever were given until the infant was six or more months of age. Readiness for supplementary feeding was judged by the ability to crawl, to sit up or by the appearance of teeth. The main supplement was incumbe but this was of entirely different character from the watery gruel mentioned earlier. This traditional incumbe was prepared by a preliminary short boiling of the whole grain which was then crushed between grinding stones to rupture the husks. A second boiling released the content which was separated off and fed to the infant as a thick paste from the fore-finger. The only portion of the grain lost was the tough indigestible

husk.

Other undesirable changes

Zulu beer, which may be regarded more as a food than as a drink, once played an essential part in the diet and social life of the traditionalist. Under modern conditions, with the breakdown in the social system, however, many have taken to stronger drink, mainly potent spirits of their own distilling, as has been indicated. Concentrated drinking at the week-end results in fighting between persons and factions which is detrimental both to individual well-being and to good social relations. It is accepted that this heavy drinking is a social question and that it is encouraged by monotony of diet and the inadequacy of recreational facilities.

The smoking of home-grown Cannabis sativa (dagga) through a cow's horn half-filled with water was a traditional Zulu practice. It was smoked mainly by older men and at night after a meal and the effects were slept off before morning. Cannabis smoking often formed part of a competitive game played by small groups of men in a hut at night (Plant, 1905, p. 47; Krige, 1957, p. 61). By 1950 the growing of Cannabis had become commercialized. It was grown in very inaccessible and concealed areas in many Reserves in South Africa, millions of pounds' worth being destroyed annually by the police.

Persistence of some taboos deleterious to good nutrition

Not all traditionalist habits in relation to food

were good. Some customs were detrimental to health. Such were the taboos attached to the use of milk, amasi, meat and eggs, which were found to persist in a significant number of families in 1958 and continue to a lesser extent today. Those taboos directed to milk and meat affect chiefly married women, who may not partake of the milk and meat of the home of their in-laws until certain rituals have been carried out. Since these rituals involve the slaughter of cattle, the period of the taboo may continue almost indefinitely in a home that lacks the means for carrying out the rites, regardless of intervening pregnancies or periods of lactation. Eggs are forbidden to women, especially younger ones, because they are thought to bring about an undesirable degree of sexual stimulation. Young boys, too, should abstain from eggs because eggs are believed to make them sexually precocious, and also difficult for the mother to manage during the absence of the father.

The situation in the Valley by the middle of the twentieth century, then, can be briefly summarized as follows:

The population had become so dense that there was insufficient land for the traditional Zulu subsistence economy to be possible any longer. People had come to rely to a very great extent on food bought in the stores, money to buy which was obtained by unskilled migrant labour of a week-end commuting type in the Durban-Pinetown industrial complex. The traditional extended family, responsible in the past for care of the aged and infirm,

widows and orphans, was rapidly disappearing before the Western-type individual family, too small to assume such responsibilities. State Welfare services were inadequate. Education was, in keeping with the low wage-level, of a low standard, about 40% of the adults having received little or no education. Housing and sanitation were still at a primitive level. Apart from vaccination against smallpox, there were no medical services in the Reserve other than those of indigenous herbalists and diviners. The change from a subsistence to a wage economy represented a transition from wholesome, unrefined foods, prepared in a manner involving little loss of nutritive qualities to a diet of refined and processed foods, chiefly carbohydrates. At the same time, Indian and White cooking techniques, especially that of frying, had, in the process of being adopted by the Zulu, become translated into the excessive use of saturated fats, gross over-cooking, the practice of frying vegetables after first having boiled them and the addition of liberal amounts of chillies and curry to their dishes. In the feeding of infants the long period of breast-feeding of the traditional Zulu was giving way increasingly to artificial feeding, using processed carbohydrate "foods", such as sugared liquid porridge, grossly deficient in essential nutrients. It is little wonder that high on the list of the principal causes of morbidity in the Valley, stood malnutrition, infantile diarrhoea and gastro-enteritis.

Summary of the factors contributing to health problems in the Zulu community of the Valley of a Thousand Hills

(a) Inadequate Nutrition

Lack of protein and protective foods.

Increased reliance on nutrient-deficient, commercially-processed foods.

Bad cooking practices.

Defective soil husbandry.

Poor agricultural methods.

Ignorance of the relationship between the quality of food consumed and health.

(b) Customary practices and beliefs

Restrictive taboos.

Magical conceptions of disease.

Fear of witchcraft.

Poor child-rearing techniques.

(c) Social disruption and migrant labour

Disrupted family life.

Social cleavages and tensions.

Frustration and alcoholism.

Weakened moral standards.

(d) Lack of economic opportunity

Economic poverty and insecurity.

Inadequate technology.

Lack of capital for development.

(e) Poor education and amenities

Absence of medical and social services.

Low educational level.

Lack of recreational facilities.

Poor housing.

Bad environmental sanitation.

CHAPTER IV

PRACTICAL OBJECTIVES AND PRINCIPLES UNDERLYING A SOCIO-MEDICAL APPROACH TO PROBLEMS OF HEALTH

The challenge

With the roots of malnutrition lying in a multiplicity of social, cultural, economic and environmental factors it was clear from the outset that if any permanent solution to the problem was to be achieved, a broad socio-medical approach would have to be adopted: an approach that would give consideration not only to the influence of existing conceptions of disease, habits, traditions and customs, particularly nutritional customs, but to the total environment - social, cultural, economic and physical.

The challenge was to arouse human interest, initiative and effort to overcome the problems by first creating an awareness of the great need for health-giving and protective foods. This is the real challenge that faces any fundamental and realistic approach to the sinister evil of malnutrition in these areas which, today, represent in microcosm the universal problem of diminishing food resources in the face of alarming population growth - the problem cycle of ignorance, apathy, low productivity, malnutrition - manifest and concealed, and disease.

In Chapter I, an outline was given of preliminary steps taken from 1947 to 1951 to establish a medical service to meet an urgent need felt by all sections in

the Valley. This was to provide a spearhead or channel of approach to the people for the broadly based, long-term, promotive health programme to be developed and sponsored by The Valley Trust. This programme is set out in Fig. 5, p.63.

Aims and objectives

On 13th February 1953 The Valley Trust was formally constituted to take over responsibility from the author for the administration and future development of the overall socio-medical experiment. The following relevant objects were embodied in its Constitution[1]:

- to promote the health and well-being of the local Zulu people with due regard to the significance both of their social, economic, educational and nutritional customs, and of their total social environment, as factors in the aetiology of ill-health;
- to devise, teach and demonstrate the methods best calculated to relate the project to the needs of the local Zulu people, taking into account the manner and conditions of their lives, using whatever is of value in their traditional outlook and institutions, and recognising the implications of the impact of Western society;
- to ensure the embodiment of the services and facilities provided or sponsored by the Association of the principle of securing the active participation of Zulu people, in order thereby to foster the development of a sense of responsibility, and to extend the project at a pace consistent with the growth of the needs of the Zulu people and of their capacity to profit thereby;

(continued next page)

[1] Trust Deed of The Valley Trust, Botha's Hill, Natal, dated 13th February 1953.

- to co-operate with official and private bodies whose objectives are in accordance with the character and functions of the Association;

- to promote investigations or research relating to any matter connected with the experiment;

- to co-operate in the extension of the medical services already in existence and to establish or co-operate in the establishment of a hospital;

- to establish or co-operate in the establishment of agricultural activities, including soil and water conservation projects, that are calculated to stimulate the interest of the local Zulu people in soil husbandry and crop production and in their relation to health;

- to establish or co-operate in the establishment of opportunities and incentives for the Zulu people to develop the rural potential realistically, and to encourage and provide facilities for the sale of essential commodities and products of Zulu craftsmanship and fabricated articles;

- to establish or co-operate in the establishment of social amenities of a cultural, religious, recreational and educational nature;

- to devise, formulate and impart principles of guidance which, although designed to promote the health and well-being of the local Zulu community, may be applied or adapted generally to any community.

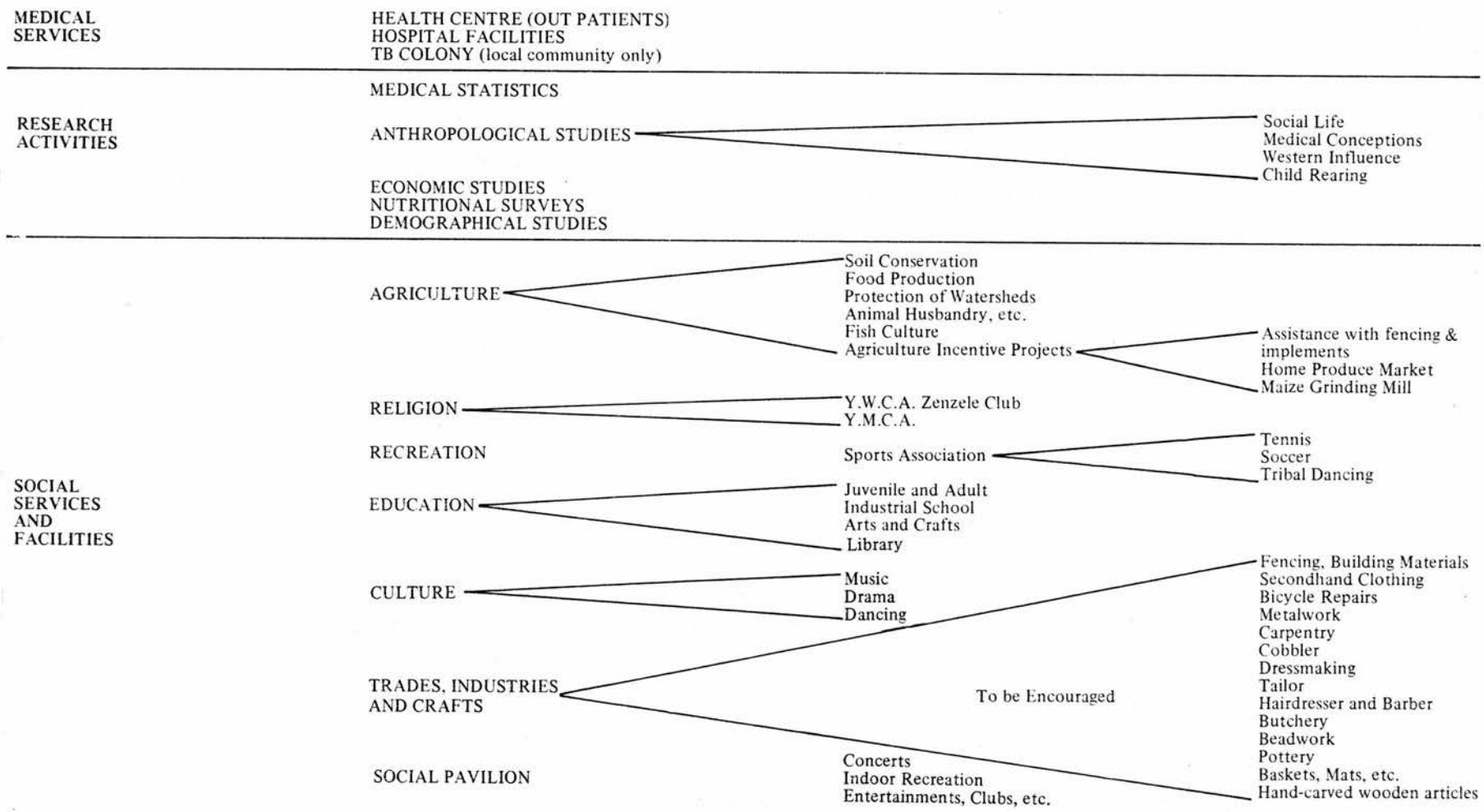

Fig. 5 OUTLINE OF PROGRAMME FOR DEVELOPMENT

Role of doctor and nurse as motivators for change

Fundamental to the success of the overall socio-medical experiment is the need for the doctor and, or, nurse to encourage in patients an awareness of their basic nutritional requirements and to motivate them towards taking advantage of the multiple promotive health services and facilities provided by The Valley Trust.

> "Changing basic habits is a formidable task unless the interest of the individual can be aroused. There is no one better situated and equipped to initiate and stimulate interest in nutrition than the clinician functioning at the interface between the patient conditioned by concern over illness, and agencies for change". (Stott, 1973)

Fig. 6 The moment of opportunity for opening wider horizons in health concepts.

Patient motivation

Although the Health Centre has been both historically and conceptually the primary point of motivation in the encounter between patients and agencies for change, the complementary services of The Valley Trust have enabled the initial interest, once aroused, to be translated into action.

A closely integrated referral sequence allows the interested individual to move readily from the Health Centre to the Nutrition Education or Agricultural sections.

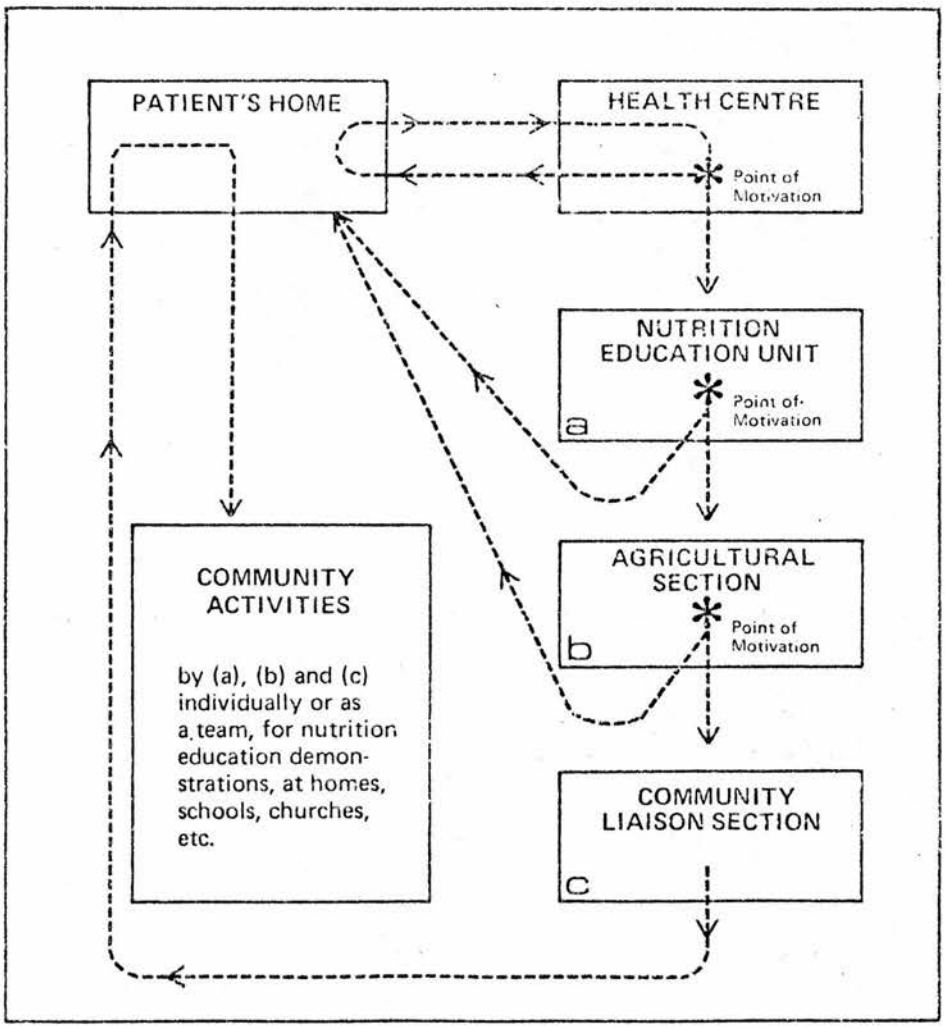

Fig. 7 The "referral chain". Illustrating the progress of the motivated patient, subsequent to the clinical interview, through the complementary nutrition education and agricultural services of The Valley Trust.

The "referral chain" represented in Fig. 7 lies at the core of the promotive health programme and indicates the sequence of opportunities available primarily for malnutrition patients attending the Botha's Hill Health Centre.

As would be expected in a strongly conservative people with deeply rooted mystical conceptions of causation in illness, there is a natural reluctance to accept an idea so foreign to their thinking as a direct relationship between faulty dietary habits and ill health. Thus several visits to the medical clinics are often required and persistant tactful propaganda from the medical staff before the obstacles in the patients' mental attitude can be overcome. Imposition or compulsion play no part in the process.

Experience has shown that by far the greatest response comes from women particularly during the ante-natal period, and women with young families. This has been observable at all stages of the referral chain sequence leading to the point where women become agencies for change within the community.

Implementation of objectives from 1947

Table 1, p. 68 outlines, in chronological order, the sequence of main developments in the overall socio-medical project, distinguishing those of The Valley Trust from those of the Botha's Hill Health Centre.

The circumstances leading up to the securing of the site, the building of the Health Centre and the participation of the State Health Department (formerly Union Department of Health) in the medical component of the overall socio-medical project, were outlined in Chapter I. The development of the Health Centre is recorded in Chapter V and a description given of the various medical services which evolved, also of the early efforts to build a satisfactory relationship with leaders of the community.

The provision of free accommodation for the sub-centre at Ngcolosi was an unprompted response from the tribal area, indicating an acceptance of the Health Centre and a desire for an extension of its services. This was the first of a series of sub-centres provided on the same basis in other tribal areas.

In the interests of brevity and clarity, developments of a cultural, religious and recreational nature have been omitted from Table 1 but will be discussed in Chapter VI. The T.B. Settlement, an autonomous organization developed independently of The Valley Trust, is discussed in Chapter V.

Table 1 Implementation of objectives from 1947

Sequence of major developments in the overall socio-medical experiment.

Date	HEALTH PROMOTIVE SERVICES (The Valley Trust)	MEDICAL SERVICES (Botha's Hill Health Centre)
1947	Site secured adjacent to Zulu Reserve for overall socio-medical experiment	-
1948	Negotiations with State for establishment of Health Centre as spearhead to the experiment	-
1950	Erection of Health Centre buildings	-
	Portion of site released to Toc H (Natal) for establishment of T.B. Settlement	-
1951	Health Centre buildings leased to State January 1951. Commencement of soil rehabilitation and vegetable garden demonstrations. Distribution of trees for fruit and windbreaks	Health Centre out-patient services opened to community
1952	Maize Grinding Mill installed (hand operated)	(T.B. Settlement opened for convalescents)
1953	Valley Trust registered as a Welfare Organization (W.O.1736)	Ngcolosi sub-centre opened
1954	Erection of simple open shelter for nutrition education and cooking demonstrations	-
1955	-	Umfula and Fredville sub-centres opened
1956	Employment of full-time trained agricultural demonstrator	-
1957	Erection of Fresh Produce Market Maize Grinding facilities extended	Embo sub-centre opened
1959	Fish culture project started	-
1962	-	Hammarsdale sub-centre opened Absorbed by State into township development 1970
1963	Erection of Food Preparation Unit in demonstration gardens	-
1964	"Observer Trainee" courses commenced	-
1970	-	Bophela sub-centre and Health Centre emergency ward opened
1971	Opening of new Nutrition Education Unit adjacent to Health Centre	-
1973	Nutrition Education Unit extended	-

Perspective

The activities of The Valley Trust, though essentially inter-related, may be divided into the categories of POLICY, RESEARCH, SERVICE and EDUCATION:

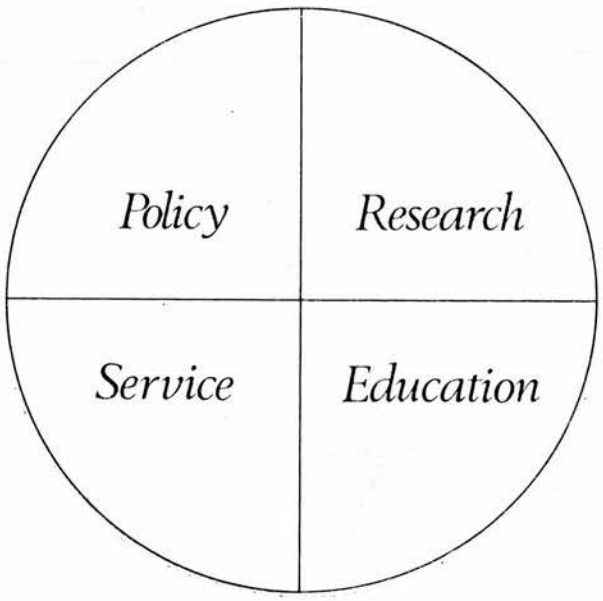

Fig. 8 Diagrammatic representation of 'totality of approach' of The Valley Trust.

These four aspects express the author's view that in order for an organization such as The Valley Trust to become and remain both viable and relevant, its activities should embrace:

- a broadly based, comprehensive policy for development,
- an investigative and evaluative aspect,
- a service dimension which encourages individual response and initiative, and
- an educational aspect by which experience is shared with the wider community.

As policy, research, service and education react within the organization, the opportunities for growth and adaptation to changing circumstances remain almost limitless.

CHAPTER V

MEDICAL SERVICES

Botha's Hill Health Centre.

Staffing, administration, organization and main features of the service.

As already outlined in Chapter I, this service was established in 1951 by the author with the co-operation and participation of the Union Health Department. It provided the medical foundation and spearhead to the overall socio-medical experiment. Table 1, p. 68 indicates the phases of its development relative to the main services and facilities provided by The Valley Trust.

Throughout its first year the Health Centre functioned without telephone, electricity or ambulance. In the early months the staff consisted of one medical officer (the author), two trained nurses, three health assistants, one of whom was a laboratory side-room technician, and a labourer.

Towards the end of 1951 an additional medical officer and a part-time European clerk were authorised. During the succeeding years the staff steadily increased and by 1958 consisted of the following:

2 full-time medical officers	European
1 part-time medical officer	
1 part-time dental officer	
1 full-time woman clerk	

continued

3 full-time nursing sisters	African
1 full-time staff nurse	
3 full-time health assistants:	
- laboratory technician	
- reception clerk/recorder	
- field worker/community liaison officer	
4 nurse-aides	
2 drivers	
1 labourer	

Apart from the addition of a further trained nurse and a nurse-aide, the establishment has remained substantially the same to the present.

The accommodation which has increased over the years, today consists of:

- reception hall,
- two reception offices communicating by counters with the reception hall,
- small pathology laboratory,
- general office,
- two waiting rooms,
- out-patient department with usual basic facilities,
- operating theatre equipped for minor surgical procedures,
- two consulting rooms,
- dental room and ante-room,
- two store rooms (drugs and equipment),
- dispensary,
- administrative office, etc.

A feature of the lay-out of the out-patient department is its compactness and the close inter-relationship of the various sections which are in close proximity to the main waiting area for patients. This

has avoided overlapping in administration, reduced staff requirements and has led to a relaxed and friendly relationship between nursing staff and patients. It is here, both amongst waiting patients and those awaiting prescribed treatment before discharge, that valuable opportunities for health promotion exist - particularly with regard to nutrition education.

Administrative procedure for the admission of patients to the Health Centre is simple and ensures minimum delay in the movement of patients to the clinical section. A specially designed clinical record card provides, either directly, or by cross-references with a variety of registers, a record of all clinical and administrative information relative to a patient. A small card containing the patient's name and his Health Centre number is retained by the patient for future identification. In the event of loss of the latter, a cross-reference register with the name and number is readily at hand at the reception counter. Consideration has been given to the ready availability of records not only for administrative and clinical purposes but for evaluation studies and research. The only papers attached to clinical record cards are district nursing and continuation cards; reports, X-Rays, correspondence etc., are filed separately in numerical order with a cross-reference. Apart from attendance registers for the various clinics e.g., ante-natal, mother and baby, dental etc., registers are also maintained for cases of tuberculosis, venereal disease, bilharzia, amoebiasis, kwashiorkor and notifiable diseases.

All procedures for register entries have been designed to follow a simple routine so as to avoid unnecessary absorption of nursing staff time.

A feature of out-patient department procedure is the preliminary interrogation of patients by a nurse and the recording on the clinical record card of temperature, weight, immunization state and any other relevant information or observations likely to be of assistance to the doctor. The examination of urine for albumin and sugar is routine for all new cases. The microscopic examination of urine (e.g., in suspected bilharzia), sputa, cervical and urethral smears, stools etc., are also procedures that may be instituted by the receiving nurse before the patient is seen by the doctor.

Main aspects of the service are the general out-patient department with its ante-natal, mother and baby and dental clinics, a small well-equipped laboratory with a full-time microscopist, five sub-centres operating at remote points radiating from the Health Centre, and a domiciliary care service. Mobility of staff for district and sub-centre visits, likewise the transport of non-ambulatory patients, has been ensured by two rugged vehicles based on the Health Centre - one an ambulance. The transport of non-ambulatory patients for admission to Durban hospitals has from the time of the opening of the Health Centre been undertaken exclusively by the voluntary workers of the Red Cross Society based at Pinetown, 10 miles (16 km) distant. Authority for the Health Centre to issue free rail and road transport

warrants to and from Durban in respect of ambulatory patients, brought the specialist facilities afforded by King Edward VIIIth and King George Vth (tuberculosis) hospitals and the valuable free facilities of the Durban Chest Clinic within reasonable reach of the Health Centre.

By employing local young women as nurse-aides, it became possible to relieve the trained nursing staff of relatively unproductive and technically less skilled duties, thus freeing them for work of more responsible nature. An important aspect of this practice is the realistic background of practical experience and knowledge acquired by these young women, invaluable to those passing on to nursing as a career. This has happened with four former Health Centre nurse-aides who are today qualified State registered Nurses employed in responsible positions elsewhere.

Those who have remained at the Health Centre and continued their general practical experience, have become capable of taking on considerable responsibility both in the clinics and in home visiting. At the Health Centre, at present (1976), are two nurse-aides from the community who have been employed on the staff continuously for twenty-four and twenty years respectively and a third who is now in her seventeenth year of employment.

A further important aspect of the employment as nurse-aides of young women of the area is the valuable link which they create with the community of which they are an integral part and thus they contribute towards a closer understanding and a better relationship and promote a

sense of identification in the people not only with the Health Centre, but with The Valley Trust.

At the very outset, duty sheets for nurse-aides, the qualified nursing staff and field-worker (health assistant), were prepared by the author in his capacity as Medical Officer-in-Charge of the Botha's Hill Health Centre. These duty sheets, as appear below, were embodied in the first Botha's Hill Health Centre Annual Report (Stott, 1951) to the State Health Department, Pretoria. As they provide a brief, concise record of the scope and character of the duties of the above key personnel and furthermore reflect many aspects of the nature of the approach which was adopted in the medical services during the early formative years, it is considered appropriate to include them here unaltered.

DUTY SHEET[1]

Nurse-Aides

(a) Collect patients and clinical record cards from the reception office.

(b) Sort cards according to medical officers or clinics indicated, and arrange patients accordingly.

(c) Collect urine specimens from all new cases; label the containers and take to laboratory for albumin and sugar tests. (Routine urine examinations are only carried out annually unless ordered otherwise by a medical officer).

(d) Collect from patients stool specimens brought by them for examination.

(e) Take weights of all patients. This should be done at least monthly and recorded on clinical record cards.

continued

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[1] From the Botha's Hill Health Centre Annual Report for 1951. (Stott, 1951).

(f) Take temperatures of all patients, if time permits, and record on clinical record cards.

(g) Arrange for immediate isolation in waiting room of any cases which may be infectious, e.g., whooping cough, measles, chicken pox, small pox, etc.

(h) Arrange patients so that the obviously ill will receive priority and not be kept waiting unduly.

(i) Act as interpreter for medical officers.

(j) Remove outer dressing from wounds, etc., in preparation for medical officers.

(k) Do simple dressings under direction of medical officer or sister.

(l) Assist in setting of irrigation and dressing trays. Prepare dressings from sterilizer. Clean theatre instruments weekly.

(m) Accompany nursing sisters on district visits.

(n) Keep consulting rooms, theatre, out-patients' department, dispensary and clinics clean and tidy.

(o) Clean dispensary bottles; also assist staff in filling and labelling of bottles in dispensary.

(p) Sewing and mending.

(q) Check laundry.

The main aspect of the duty sheet of the qualified nurses (p. 77) that should be noted, is the manner in which health education and nutrition education have been integrated into their general duties. Health Centre nurses are thus concerned not only with treatment but with the education of patients and the dissemination of new ideas, the introduction of perspectives previously not found in the community, new attitudes and values in regard to health and illness, new standards in cleanliness and hygiene and new ideas in the management of illness in the home.

With the opening of sub-centres from 1953, the increase in nurses' duties brought with it additional

responsibilities as they conducted these clinics entirely on their own with only the assistance of a nurse-aide and the field-worker/community liaison officer. As at the Health Centre, clinical record cards were introduced from the outset. These are monitored later, at the Health Centre, by the medical officer with the nurse concerned present. Cases encountered at sub-centres beyond the abilities of the nurse are transported to the Health Centre for further investigation, admission to hospital or returned for domiciliary care. In any event, the nurse assumes a high degree of responsibility and has many opportunities for extending her experience and knowledge. This is furthered by a roster system ensuring a weekly rotation of nursing personnel between Health Centre, sub-centres and domiciliary duties. This is an educative and broadening experience with considerable benefit not only to the efficiency of the nurse, and the functioning of the overall socio-medical project, but of greater importance, to the community as a whole.

DUTY SHEET[1]

Nursing Sisters.

(A) HEALTH CENTRE:

(i) Medical: General and out-patient clinic duties.
Ante-natal clinic.
Mother and baby clinic.
Assist medical officers in dispensing drugs to patients.

continued

[1] From the Botha's Hill Health Centre Annual Report for 1951. (Stott, 1951).

(ii) Health Education:

Take every opportunity to stimulate the interest of patients and their families in attendance during clinics, in the following:

(a) Personal and environmental hygiene.
(b) The importance of soil care.
(c) The importance of food production.
(d) The importance of supplementing the daily dietary with home grown produce.
(e) Communicable diseases, their nature and methods of communication and transmission.
(f) Make the people aware of the guidance available from the Health Centre for all those willing to co-operate.

N.B. Endeavour to educate rather than instruct.

(iii) Administration:

(i) Clinic registers:
Ante-natal.
Mother and baby.
Bilharzia follow-up.
Tuberculin patch test.
Venereal diseases.
Tuberculosis.

(ii) Equipment register.

(iii) Stores issue register.

(B) DISTRICT:

(a) Medical - home nursing
(b) Health Education - as in A(ii) above
(c) Administration - recording results of home visits on nursing cards attached to clinical record cards.

Neither male nor female "health educators" are employed. Health education at the personal level is integrated into the duties of the nurses and, to a limited extent, of the nurse-aides. At an environmental level health education is integrated into the duties of the field-worker/community liaison officer whose duty sheet, drawn up in 1951, still forms the basis of his present duties.

DUTY SHEET[1]

Health Assistant — Field Worker

i. Assist with admission of patients when necessary.

ii. Supervise and control Health Centre motor vehicle trips and keep detailed record as specified.

iii. Co-operate with medical and nursing staff in regard to the supply of information in connection with the home environment of patients.

iv. Compilation of maps and charts of the district, showing situation of habitations and streams; habitations being numbered and the numbers recorded on the clinical cards; also in Family Index Book for ready reference.

v. Record in Community File observations made and information obtained under specified headings. (Note: Community File contains numerous sub-headings dealing with topography, history, sanitation and water supply, food production, economic standards and so forth).

vi. Keep monthly returns in rainfall register.

vii. Keep minutes of staff meetings.

viii. Visit the T.B. Settlement twice weekly ($\frac{1}{2}$-hour visits) for suitable occupational therapy, e.g., practical demonstrations with co-operation of patients in vegetable cultivation, compost-making and use, etc.

FIELD WORK: (educational)

(a) Environmental Hygiene.

Refuse disposal - human, animal and domestic. Method of introduction of compost-making.

Fly-breeding - diseases caused, e.g., dysentery, also method of controlling fly-breeding.

Other insects and vermin - lice, rats, fleas, bugs, cockroaches, etc.

Water - protection and collection.

Housing - ventilation, etc.

continued

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[1] From the Botha's Hill Health Centre Annual Report for 1951, (Stott, 1951).

(b) Agriculture.

Stimulate interest in -

Soil conservation.
Compost - its making and use in a simple home garden.
Preparation of a garden - terracing, contouring and manuring.

(c) Food Production.

Stimulate interest of plot holders in growing vegetables and fruit, especially legumes.

(d) Communicable Diseases.

Nature of diseases:

Water-borne - typhoid, bilharzia.
Milk-borne - T.B., typhoid, diphtheria, etc..
Others - smallpox, V.D., scabies, measles, worms.

An important aspect in the early development of the Health Centre medical services, was the establishment of initial contact with the community through the field-worker/community liaison officer. In the 1951 Health Centre Annual Report are recorded 485 visits to homes, 18 to schools and 39 to chiefs and indunas (headmen) - a total of 542. In the 1952 Health Centre Annual Report are recorded 543 visits to homes, 14 to chiefs and indunas, 11 to schools and 4 to tribal meetings - a total of 640. With the opening of sub-centres and the development of the complementary services of The Valley Trust, the necessity for these community visits diminished and are today confined mainly to specific public health matters.

The duties of the remaining two health assistants, the laboratory technician and the reception clerk/recorder, are briefly as follows:

laboratory technician, examination of stools, urine, sputa, smears, blood etc., and the forwarding of specimens for serological examination, cultures etc., to the State laboratory in Durban;

reception clerk/recorder, general administration duties in connection with the reception of patients, preparation and analysis of statistical returns in respect of attendances, laboratory examinations, immunizations, notifiable diseases etc.

Prevalence of malnutrition and need for nutrition education

The prevalence of malnutrition was clearly evident from the outset. Kwashiorkor, marasmus and pellagra were commonplace and were seen in the clinics on most days despite the fact, well known to the Health Centre staff, that these forms of malnutrition were generally believed by the community to be the products of witchcraft, ancestral displeasure or other 'mystical factors'.

On the assumption that the total population suffered from malnutrition, whether clinically manifest or 'concealed', nutrition education was regarded as of paramount importance after the immediate clinical needs of patients had been met. It was thus widely integrated into the management of patients in all clinics and domiciliary care activities.

A close and essential functional relationship has always existed between the Health Centre and the many promotive health services and facilities provided by The Valley Trust. As stressed earlier the role of the doctor and nurse in awakening patient interest in dietary habits

has from the outset been regarded as fundamental to the success of the entire nutrition education programme. Experience has confirmed that there is no one better situated to initiate and stimulate patient interest than the doctor functioning at the interface between the patient, conditioned by concern over illness, and the agencies for change. The traditional esteem afforded the 'doctor' in Zulu society, indeed in most African societies, places an orthodox clinician in an incomparable position for gaining patient interest in dietary habits and so preparing the way for the complementary services of the nutrition educator, and in the rural context, the agricultural demonstrator as well. A trained and genuinely interested nurse also has a profound influence on patients in this respect because of her professional association with the doctor.

At the Botha's Hill Health Centre and The Valley Trust, where this association and co-operation between doctor, nurse, nutrition educator and agriculturist has been in operation from earliest days, the realism of the link between dietary habits and health is now recognised by many in the community with benefit not only to nutritional standards but to soil rehabilitation and food production and other aspects of community welfare.

Domiciliary treatment and avoidance of hospitalization

Great care has always been exercised to avoid fostering hospital-mindedness and thus inadvertently negating the long-term promotive health objectives of the

overall socio-medical scheme. Thus the admission of patients to urban hospitals 25 miles (40 km) distant where they are divorced from their home environment, has been avoided when possible. On average, only 0,6% of patients attending the Health Centre were referred to hospitals for admission between 1958 and 1974 (Table 2, p. 89).

The procedure has been to give initial treatment at the Health Centre, or sub-centres, and thereafter transport non-ambulatory cases home where, in many instances, the District Nursing Service supervises and carries out the prescribed treatment (Table 2, p. 89).

Experience shows that this is well accepted by the people of the Valley who mostly dislike and fear hospitalization. Furthermore, much valuable information can be imparted by the visiting nurses to attending relatives and friends. For instance, in the management of a case of dysentery in the home, the attendants are told how to nurse the case, adjust the diet, dispose of excreta, disinfect utensils, avoid food and water contamination and so forth. Under these circumstances these directives have meaning and purpose and are intelligently accepted and put into practice. All this experience would be lost if the case were sent to hospital.

Tuberculosis, heart failure, pneumonia, burns and malnutrition are some of the more severe conditions for which people would normally be hospitalized but which, it has been found, can be satisfactorily treated in the home and, more often than not, without a preliminary spell in hospital. The ready co-operation of the family, or

neighbours, in stretcher bearing, over terrain unsuitable for vehicles, has been an admirable feature observable over the years.

Fig. 9 Home visiting by trained nurse and nurse-aide. An educative experience for both the medical staff and the family visited.

The following extracts from the author's Health Centre Annual Report for 1952 (pp. 3-5) set out some of the reasoning underlying the decision to adopt a policy aimed at encouraging domiciliary medical care with particular reference to tuberculosis (Stott, 1952):

> "Domiciliary Tuberculosis Service
>
> The Health Centre is developing, along with its district nursing service, a domiciliary tuberculosis care service. This departure is being undertaken as a possible solution to the problems of tuberculosis cases which refuse hospitalization, and to the lack of beds at hospitals[1].

continued

[1] A diplomatic reason to overcome official opposition to domiciliary treatment in 1952.

"... Domiciliary Tuberculosis Service(continued)

The possible danger of a further spread of tuberculosis by allowing such sufferers to remain with their families is naturally appreciated but, considered against the social and economic advantages to the patient, community and State, this departure may prove to be justifiable.

The policy is to establish the isolation of the sick member in a special hut if in any way possible; also to gain the co-operation and interest of the family. This is distinct from the present practice under which the State assumes almost total responsibility for the patient, who is kept in isolation from his family (the same applying to women) at considerable public expense.

An appreciable number (if not the majority) of the Bantu are still extremely superstitious about illness and particularly in respect of tuberculosis. Their distrust of tuberculosis hospitals is most marked, it being well known that a Bantu patient is very resistant to the completion of a long- or full-term of hospitalization. On the other hand, premature departure from a hospital too often results in break-down, thus wasting time, hospital services and money.

A further fact, generally recognised by doctors, is that an unhappy and fretting patient does not as a rule show a good rate of recovery.

The divorcing of a sick individual from his or her environment, family and friends for a prolonged period - perhaps extending over two or more years - cannot be regarded as wise; particularly in the case of married persons with families.

The educative value to a Bantu family and the immediate community when a sick member is being treated in their midst must be considerable."

"DISTRICT NURSING SERVICE

Since the allocation to the Health Centre of a motor vehicle in February, 1952, this service has been able to develop.

619 Home visits were recorded during the year, together with details of each visit. This compares with 133 such visits during the previous year, 1951.

At this stage, it is not possible to state with accuracy the extent of the area covered. The service has operated mainly along the Zulu Reserve Road which extends from Botha's Hill to the Umgeni River, a distance of approximately 14 road miles. Homes within some 2 miles of this road were also served. Owing to the extremely hilly and rugged nature of the country and the absence of access roads, the staff were compelled to travel much of it on foot.

continued

"... DISTRICT NURSING SERVICE (continued)

Points of importance and interest in reporting on this service are:-

(a) The community has received the service with appreciation and has co-operated well.

(b) Considerable numbers of patients who were treated in their own homes would otherwise have had to be admitted to Durban and Pietermaritzburg hospitals. Commonly, these were chronic heart diseases; paralytics; dysenteries; malnutrition cases; bronchitics and asthmatics; varied acute infections; maternity cases, and traumatic ones - especially burns.

(c) The mismanagement of illness by the Bantu, because of their primitive* conceptions and supertstitions, is well known. This frequently results in complications - often serious - leading to long terms of invalidism; or to inactivity at home or elsewhere.

The ineffectiveness of spoken words of advice given at a clinic is unfortunately only too apparent. This may be partly accounted for by the patient, or a relative, feeling that the circumstances surrounding the illness cannot be sufficiently understood by the clinic staff, particularly if European, who are functioning in isolation from the home environment.

The Health Centre's Native nursing staff, with their knowledge of such home environments, and having too an understanding of the Bantu attitude towards disease, are thus more likely to gain the confidence and co-operation of the patients and their relatives. This is of primary importance if progress is to be made, not only in the curative field, but, and really more important - in the preventive."

"MATERNITY

Except in cases where complications are anticipated, women are advised to deliver at home and not occupy hospital beds.

In maternity, hospitalization appears to be over-popular. Home confinements are strongly encouraged by the Health Centre.

Requests received for ambulance transport to hospital are considerable in number, but these are invariably refused in normal labour cases. In abnormal cases, where the life of mother or child is endangered, ambulance transport and hospitalization are arranged promptly.

continued

* More correctly mystical (or magico-religious) in present-day terminology.

"... MATERNITY (continued)

A midwifery service has not been established, because of lack of personnel and of suitable transport.

An ante-natal clinic is held and labour cases in difficulty are visited by the Health Centre district nursing service. If the nursing sister is unable to assist, the case is brought to the Health Centre, from whence it is admitted to hospital if thought necessary by the medical officer.

Simple emergency hutments, alongside the Health Centre, for maternity use, would be of considerable benefit and assistance to the community and the Health Centre staff[1]."

Attendances, number of domiciliary visits.

From the time of the opening of the Health Centre doors to the community, it was clearly evident that its services were greatly welcomed, not only by the people of the Valley, but by many from the surrounding areas and further afield.

By the 31st December 1955, 34 157 individuals had sought medical assistance from the Health Centre and sub-centres with total attendances reaching the figure of 126 143, representing an average of 3,7 attendances per individual. Domiciliary visits numbering 4 363 had been made by the Health Centre district nursing services and, relative to community health, 1 942 visits were made by health assistants to schools, homes, chiefs, headmen and other appropriate contacts, mainly with regard to communicable diseases, immunizations, vaccinations and

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[1] Two such hutments were erected alongside the Health Centre by The Valley Trust in 1953. These were never used for this purpose as patients preferred to adhere to their normal practice of delivering at home unless complications threatened, in which case, urban hospitalization was acceptable.

domestic and environmental matters generally.

With the opening of a sub-centre in each of the four adjacent tribal areas between 1953 and 1955, overall attendances increased from an average of 18 058 during the initial years 1951 and 1952, to the figure of 34 482 in 1955. (Table 2). During 1955, in order to discourage irresponsible attendances, the small fee of a shilling per patient was introduced. The permanently unfit, those suffering from tuberculosis, pensioners, the destitute and recipients of disability grants, were exempt from payment. This resulted in an attendance drop of over 6 000 in 1956 and a far better personal service resulted as the available medical staff now had more time to devote to promotive health activities, in particular, nutrition education. The opening of sub-centres at strategic points radiating from the Health Centre, with the co-operation of the communities concerned, constituted a big step forward in the overall programme and widened considerably the sphere of influence, not only of the Health Centre, but that of The Valley Trust. In several instances, for example, demonstration gardens were established alongside these sub-centres.

The provision (1953, 1955, 1957) of free accommodation for sub-centres, at remote but strategic points in the Valley, by leading members of the community, marked the earlier major break-through in the overall programme, with its objective of evoking positive response and co-operation.

Table 2 Attendances at the Health Centre (including sub-centres), domiciliary visits and admission to urban hospitals

Year	Attend-ances TOTAL	New Cases TOTAL	Ante-Natal Clinic	Baby Clinic excluding Mothers	District Nursing Service	Admissions to urban Hospitals
1951	17 781	6 376	857	2 951	133	
1952	18 336	10 287	914	2 962	619	Records
1953	26 260	5 949	790	4 214	1 027	not
1954	29 284	4 933	1 062	5 199	1 341	available
1955	34 482	6 612	2 028	6 793	1 243	
1956	28 345	6 456	1 668	5 823	2 002	
1957	23 950	6 456	1 635	5 230	2 530	
1958	22 218	5 505	1 751	4 466	2 097	171(0,76%)
1959	24 633	5 799	1 890	5 214	2 474	257(1,04%)
1960	30 509	6 663	2 226	5 481	2 553	265(0,86%)
1961	31 148	6 601	2 336	5 127	3 315	240(0,77%)
1962	36 349	9 679	2 530	6 447	3 072	231(0,63%)
1963	41 428	12 018	4 230	7 563	2 146	274(0,66%)
1964	33 229	10 066	3 227	6 279	2 152	210(0,63%)
1965	29 112	8 631	2 437	5 761	2 240	204(0,70%)
1966	30 813	9 075	2 595	5 836	1 724	244(0,79%)
1967	33 787	10 375	2 666	6 879	3 036	181(0 53%)
1968	34 317	10 094	2 391	7 284	1 140	216(0,62%)
1969	35 599	10 433	2 319	6 839	572	216(0,60%)
1970	34 439	9 551	2 191	5 937	1 079	132(0,38%)
1971	37 041	11 228	2 398	6 572	705	228(0,61%)
1972	36 095	10 752	1 912	6 650	386	191(0,52%)
1973	35 103	10 322	2 008	6 416	208	198(0,56%)
1974	35 295	8 084	1 644	5 248	275	136(0,38%)
1975	30 210	8 463	1 656	4 803	425	235(0,77%)

Note: The decline in domiciliary visits by the District Nursing service is probably due to the opening of the Health Centre Ward for emergency and short-term cases.
Statistics from Health Centre Annual Reports.

Provision of wards for emergency and short-term cases

In 1970 two small five-bedded general wards for emergency and short-term cases, were made available in the adjacent Tuberculosis Settlement, for the exclusive use of the Health Centre. The provision of this essential amenity met a long felt need. Over 1 800 cases have been admitted during the past 5 years for conditions such as bronchitis, pneumonia, gastro-enteritis, dysentery, dehydration, fractures, cardiac failure and snake bite.

No maternity beds are provided nor is a full-time midwife available. The majority prefer to remain in their own homes; prior arrangements are made at the ante-natal clinic for complicated and doubtful cases to be referred to Durban hospitals for further investigations and admission if necessary. A small number of cases are delivered at the Health Centre and transported home thereafter.

Incidence of disease

There are no reliable population figures or statistics available for this area. Figures based on Health Centre attendances are as near reliable as is possible but even these are selective and in view of irregular attendances and the concealment of disease, can give a misleading picture.

The Zulus are notoriously irregular in their attendances and it is well-known that there is a considerable amount of concealment of serious disease, particularly of poliomyelitis, dysentery and tuberculosis,

diseases which are usually attributed to the influence of evil spirits and witchcraft. A paralysed limb is not regarded as a natural phenomenon and since there are many cases of hysterical paresis which respond to the treatment of their own indigenous medicine men, it is natural that cases of poliomyelitis would be expected to respond in the same manner. It is assumed that the incidence of poliomyelitis in the Valley is much higher than the figures would suggest.

As far as injuries are concerned, it is known that there are many more serious stab wounds and deaths from violence than are seen at the Health Centre and sub-centres or are reported to the authorities. Care is taken to avoid attracting police attention or spreading information about such injuries. Spitting blood is associated with long periods in hospital and separation from the family. It is therefore equally difficult to locate all the cases of tuberculosis.

Infants are subjected to enemas and "smoking" to rid them of evil spirits and as a result straightforward symptoms of underlying disabilities are frequently overlooked, or misunderstood with unfortunate results. The universal tendency to withhold fluids from victims of diarrhoea and dysentery is another misleading factor and many cases brought to the Health Centre show very marked dehydration. In all these conditions, the incidence is probably far higher than would appear from the records.

Size of area and population served

The area served by the Health Centre is approximately 100 square miles (259 km^2), with roughly 40 square miles (104 km^2) of this lying to the south and outside the Reserve. The actual population of the overall area is not known, nor is there sufficient data upon which to make a reliable estimate. It is probably in excess of 56 000, the majority of whom live within the sixty square miles (155 km^2) which make up that area of the Reserve which is under consideration in this report.

Those sections of the Reserve on which the detailed Family Health Study (Appendix A) was based, (Nyuswa, Embo and Emaqadini) are estimated at 35 square miles (91 km^2), with a population, at the time of the study in 1958, of 19 740. This figure was arrived at by the hut-count method i.e., huts per square mile (2,59 km^2), multiplied by five, the average size of family. Worked out by this method, the population density in 1958 was estimated at approximately 560 per square mile (2,59 km^2).

In the same year the Health Centre had over 52 000 case record cards of separate individuals who had attended from January 1951. The area of domicile was recorded on each card. Repeated spot surveys revealed that between 80 percent and 90 percent of these attendances come from within the Reserve. It is therefore believed that the above figures are reasonably reliable.

Due to the lack of a true census, an age and sex distribution analysis is not available, thus it is not

possible to calculate birth rate, fertility rate, general death rate, infant mortality rate, tuberculosis death rate, death rates from other important diseases, or life expectancy at birth. An analysis was made in 1952 of patients attending the Health Centre; although this is selective and does not serve a statistical purpose, the age and sex analysis of patients attending at this early stage is of interest (Fig. 10, p. 94) showing as it does, a preponderance of females in all age groups except in early infancy. From impressions gained at the Health Centre it is probable that this pattern has persisted to the present.

Principal causes of mortality and morbidity

One can only roughly assess the principal causes of mortality. Just as it is difficult to estimate the number of serious or fatal casualties resulting from riots or faction fights, owing to the great speed with which the Zulu conceals corpses and the seriously injured, so it is impossible to know how many sick people are kept out of reach of medical attention or hospitalization in the depths of the Valley.

From the limited data available, together with the impressions of Health Centre doctors and nurses, the principal causes of mortality, in order of frequency, in 1958, were regarded as follows:

Malnutrition, especially in infancy (kwashiorkor)
Infective diarrhoea (infants)
Gastro-enteritis (infants)

continued p. 95

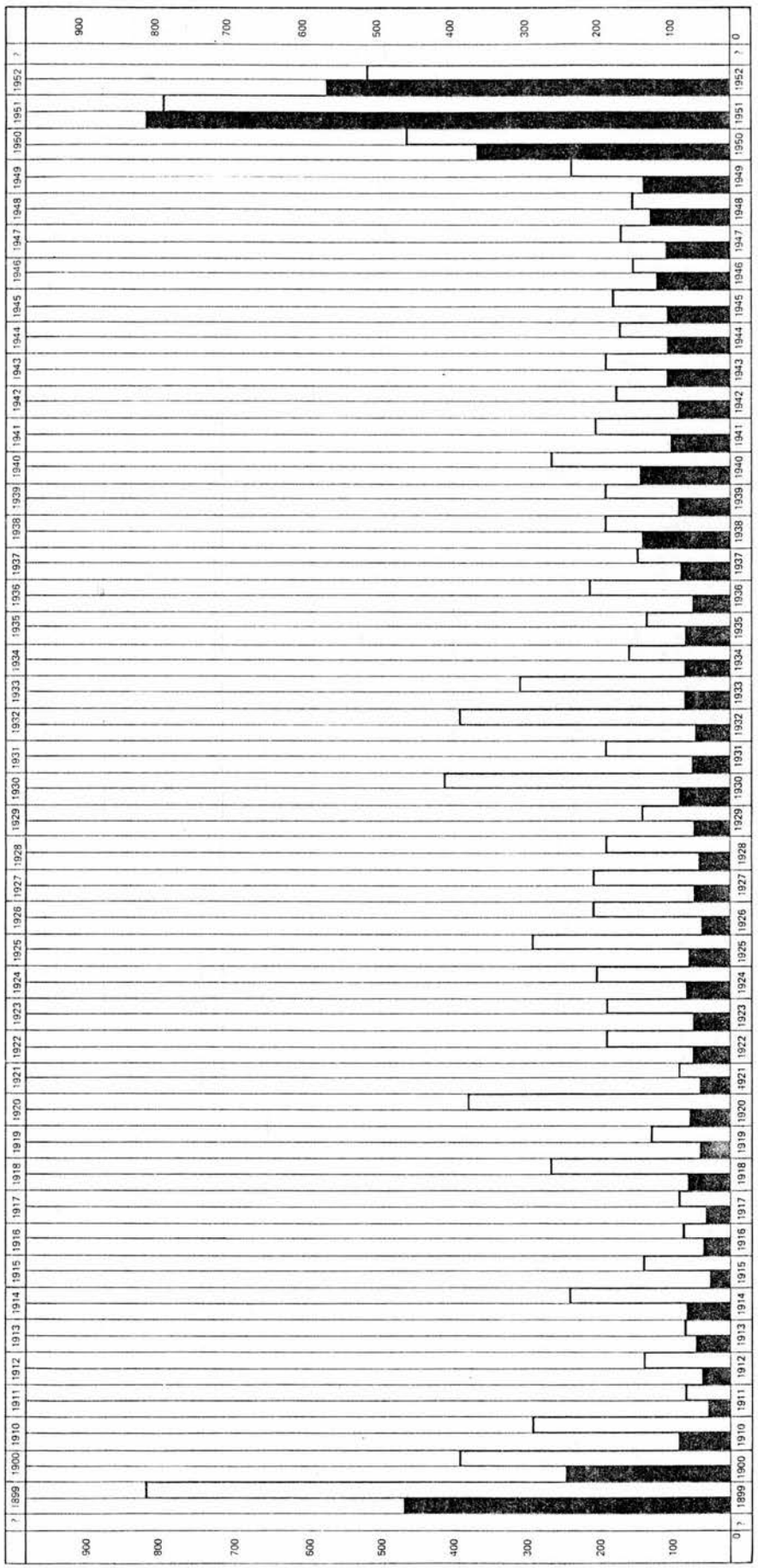

Fig.10 Age and Sex Distribution of attendances at Botha's Hill Health Centre
January - December 1952
Extreme left hand column reflects those born prior to 1899 and the adjacent column those born during the ten year period from 1900 to 1909.

Pneumonia

Assaults, especially penetrating stab wounds

Tuberculosis

Heart failure, from middle age upwards.

The principal causes of morbidity from among cases attending Botha's Hill Health Centre Services from 1953 to 1958 were as follows in order of incidence for the three periods indicated in the columns:

1953 and 1954	1955 and 1956	1957 and 1958
Upper respiratory infections	Upper respiratory infections	Upper respiratory infections
Diarrhoea (mainly infantile)	Malnutrition	Malnutrition
Gastro-enteritis (infants)	Diarrhoea (mainly infantile)	Impetigo and other local infections of skin and sub-cutaneous tissues
Worm infestation (mainly tape and round)	Gastro-enteritis (infants)	Worm infestation (mainly round and tape)
Malnutrition	Worm infestation (mainly tape and round)	Diarrhoea (mainly infantile)
Impetigo and other local infections of skin and sub-cutaneous tissues	Impetigo and other local infections of skin and sub-cutaneous tissues	Gastro-enteritis (infants)
Dental caries	Injuries and assaults	Influenza
Injuries and assaults	Dental caries	Injuries and assaults
Influenza	Influenza	Bronchitis
Whooping cough	Pneumonia	Pneumonia

Communicable diseases in order of frequency among cases attending Botha's Hill Health Centre during 1958 were as follows:

Whooping cough	109
Measles	96
Pulmonary tuberculosis	71
Chickenpox	55
Syphilis	40
Gonorrhoea	37
Dysentery, amoebic	36
Mumps	29
Dysentery, bacillary	18
G.C. ophthalmia neonatorum	9
Typhoid	2
Poliomyelitis	2
German measles	2
Encephalitis	2
G.C. ophthalmia	2
Leprosy	1

There were no major outbreaks of epidemic disease from 1951 to 1958.

Prevailing conditions, irregular attendances, inaccessibility of homes, as well as limitation of transport and personnel, made it impossible to obtain satisfactory statistical information to report on growth and development of children and the nutritional status of the population.

Health trends as indicated in Health Centre ambulance records from 1953 to 1958, are only in respect of cases sent to Durban hospitals from the Botha's Hill Health Centre. (Table 3, p. 98).

There are no records of days of bed occupancy as patients sent to hospital from the Health Centre seldom report back direct on discharge, even though they have been instructed to do so by the hospital authorities. Exceptions are those requiring continuation of treatment when it is apparent and acceptable to the patient.

It is not possible to obtain reports direct from hospitals to any effective degree. It is fully appreciated that this is due to the vast over-crowding of wards and the ever-increasing pressure of work.

Principle causes of serious morbidity requiring hospitalization in order of frequency were as follows:

Pneumonia

Congestive Cardiac failure

Fractures other than skull and spine

Malnutrition

Dysentery

Respiratory tuberculosis

Complications of labour

Internal injuries, lacerations, multiple injuries

Malignant neoplasms

Complications of pregnancy.

Table 3

Causes of serious morbidity: patients who were sent to hospital by ambulance for admission (1953-1958)

	International classification	1953	1954	1955-1956	1957	1958	Total 1953-1958
Tuberculosis of respiratory system	001-008	1	4	18	8	7	38
Tuberculosis - other forms	010-019	1	2	2	–	–	5
Infectious diseases arising in G.I. tract	040-049						
Typhoid fever	040	–	5	1	7	4	17
Amoebiasis	046	3	5	9	1	2	20
Dysentery	048	5	5	15	8	8	41
Liver abscess (probably amoebiasis)	046-582	2	4	6	3	1	16
Other bacterial diseases	050-064	1	1	1	–	2	5
Virus diseases –							
poliomyelitis	080	–	–	3	2	2	7
other	081-096	–	–	3	–	–	3
Malignant neoplasms	140-205	1	7	6	5	4	23
Mediastinal tumour	231	–	1	–	–	–	1
Allergic disorders	240-245	2	1	1	2	–	6
Diabetes mellitus	260	2	–	13	2	1	18
Malnutrition	286	4	3	31	14	8	60
Psychoses	300-309	–	1	1	1	–	3
Vascular lesions affecting C.N.S.	330-334	–	4	1	2	1	8
Meningitis	342	1	2	3	2	–	8
Paraplegia	352	–	–	–	–	1	1
Epilepsy	353	–	1	1	1	–	3
Peripheral neuritis	366	–	1	–	–	–	1
Mastoiditis	393	1	–	1	–	–	2
Rheumatic fever	400	–	2	–	2	1	5
Coronary thrombosis	420	–	–	1	1	–	2
Congestive cardiac failure	434	7	9	18	8	25	67
Gangrene	455	1	–	–	–	–	1
Pneumonia	490-493	5	19	45	22	26	117
Bronchitis	500	–	–	–	–	1	1
Other diseases of respiratory system	510-527	1	–	3	2	3	9
Appendicitis	550	–	–	1	2	3	6
Strangulated hernia	561	–	–	2	–	1	3
Intestinal obstruction	570	–	–	–	–	1	1
Gastro-enteritis	571	–	1	–	1	1	3
Peritonitis	576	–	–	1	–	–	1
Cirrhosis of liver	583	–	1	–	4	4	9
Nephritis and nephrosis	590-594	–	–	10	3	3	16
Diseases of male genital organs	610-617	–	1	1	3	2	7
Acute salpingitis	622	–	1	–	1	–	2
Prolapsed uterus	631	1	–	–	1	–	2
Menorrhagia	634	–	–	–	–	1	1
Complications of pregnancy	640-649	1	5	8	4	5	23
Complications of labour	670-678	9	1	11	8	6	35
Complications of puerperium	680-689	–	–	3	–	1	4
Cellulitis and abscess	692	–	1	–	4	4	9
Arthritis	725	–	–	2	–	1	3
Osteomyelitis and other diseases of bone and joint	730-738	–	1	1	1	1	4
Other diseases of musculo-skeletal system	740-749	1	1	–	–	1	3
Coma	780	–	–	1	–	–	1
Haemoptysis	782	–	–	–	–	2	2
Epistaxis	783	–	–	–	1	–	1
Haematemisis	784	–	1	–	–	–	1
Jaundice, hepatomegaly	785	–	–	3	–	1	4
Puo	788	–	1	3	1	4	9
Unknown	795	–	2	6	3	2	13
Fracture of skull	N800-804	–	3	1	2	2	8
Fracture of spine	N805	–	–	1	1	3	5
Other fractures	N810-829	11	12	17	16	11	67
Dislocations	N830-839	–	1	–	1	1	3
Head injuries	N850-856	–	1	3	3	1	8
Internal injuries, lacerations and multiple injuries, etc.	N860-N908	4	4	13	3	3	27
Eye injuries	N921	–	1	2	–	–	3
Burns and scalds	N949	–	–	3	3		6
Poisoning	N979	3	2	2	2	–	9
		68	118	278	161	162	787

Apart from cases in the foregoing list which required hospitalization in any event, the determining factor in deciding whether or not a case should be admitted is the accessibility of the home. It is thus essential to exercise care in drawing conclusions from this list. The policy adopted by the Botha's Hill Health Centre of avoiding hospitalization and keeping patients in their homes has been referred to earlier.

Malignancy, for example, is shown as one of the ten principal causes of morbidity requiring hospitalization. This is misleading, as the incidence of malignancy among the Zulus in the Valley of a Thousand Hills is apparently very low.

Burns and scalds, on the other hand, are very common, but with the Health Centre transport and District Nursing Service, it is possible to keep the majority of cases out of hospital.

Whilst urinary bilharzia is endemic in the Valley, intestinal bilharzia is seldom seen. Of 4 075 urines examined microscopically between 1951 and 1958 at the Health Centre, 1 428 (35%) contained S. haematobium and in only 3 instances was S. Mansoni isolated in the 3 285 stools examined over the same period.

Blindness is not a major problem in the Valley. The incidence of blindness among the African population in Natal has been estimated at 2,7 per thousand, but the figure appears to be lower in the Valley.

Some problems and difficulties encountered in the early days of the Health Centre

Throughout the first year of the Health Centre the multiple problems and difficulties arising from the lack of telephone, electricity and ambulance, together with grossly inadequate staff and equipment, were not altogether unexpected for a pioneer scheme yet to be proven. However, in due course, greater consideration was given by the State to the needs of the Health Centre services and major obstacles were gradually overcome. Dependence on White voluntary aid during these early years was considerable, particularly with regard to clerical and transport problems.

In earlier chapters reference has been made to the persistence of mystical conceptions of disease together with adherence, by a large proportion of the people of the Valley, to primitive customs, habits and beliefs. Many unexpected problems and difficulties encountered in the development of the Health Centre services were attributable to attitudes and behaviour stemming from this background and called for much understanding and co-operation from Health Centre medical and administrative staff. The following are briefly some of the more serious problems and difficulties that had to be accepted and for which allowance had to be made in the formulation of policy and in planning:

- reluctance to give clinical histories as doctors are expected to possess powers to diagnose without interrogation,
- the failure of patients, if feeling well, to return

for completion of investigation, treatment or immunization courses,

- a devotion to injections such that patients tend to consider they are receiving inadequate medical attention unless an injection is given; and if these, being medically undesirable, are withheld the patient will go to considerable trouble and expense to obtain them elsewhere - a situation wide open to exploitation,
- concealment of those communicable diseases which are attributed to factors such as anger of ancestors and are regarded as being amenable only to the administrations of indigenous medicine-men and women.
- concealment of illness such as tuberculosis with haemoptysis which are associated with long periods in hospital and loss of employment.

However, it is readily conceded by the Health Centre medical staff that a big change has come about as the community has become adapted to the services of the overall socio-medical scheme.

Financing of the Botha's Hill Health Centre services

As explained earlier, operational costs have been the responsibility of the State Health Department to whom the building is leased by The Valley Trust.

During the early formative years of the medical service, the author computed the major basic expenses and embodied them in Health Centre Annual Reports for the years 1951 to 1957. The following figures have been extracted from the 1957 Report (Stott, 1957a):-

Salaries	£ 7,375.12. 6
Total invoiced cost of all stores received	2,488. 2.10
(Total cost of drugs used during 1957 at Health Centre and 4 sub-centres £2,051.12.4)	
Running costs of motor vehicles (2)	948.11.10
Ambulance service (additional, hired)	449.15. 0
Cartage of goods	30.17. 3
Laundry	39.19. 7
	£11,332.19. 0

To this should be added:

for water and electricity (estimate)	150. 0. 0
for rental (obtained from Valley Trust records)	298. 0. 0
and miscellaneous items £500 (estimate)	500. 0. 0
	£ 948. 0. 0
Total	£12,280.19. 0

This total cost for the year 1957 is highly satisfactory when considered against the number of attendances (23 950), and the exceptionally low hospital admission rate (estimated to be less than 1%)[1] and the constructive and educative nature of the services. Of particular interest is the low expenditure on drugs (i.e., £2,051.12.4) which revealed little increase over the average annual expenditure of £1,737 for the previous five years (1952 - 1956).

[1] Records of figures of hospital admissions were regrettably not included in Annual Reports prior to 1958 but examination of Table 3, p. 98 shows the very low hospital admission rate that has prevailed throughout the years, only exceeding 1% in one instance.

The following further extract from the Botha's Hill Health Centre Annual Report for 1952 (p.8) is of interest, as it reflects the early entrenchment of important aspects of policy that have stood throughout the past 25 years:

> "The policy of the Health Centre from its inception has been to assist the willing patient only. No attempt whatever is made to interfere with the freedom of the individual, particularly with regard to choice of medical treatment, whether orthodox or otherwise.
>
> Home visits by members of the staff are only made on prior invitation or arrangement with the family, the only exception being in affairs of communal interest, e.g., epidemic disease.
>
> Periodical health examinations are only carried out routinely in the ante-natal and mother-and-baby clinics. Otherwise, the routine examination of apparently fit individuals, unless asked for, is considered to be neither practicable nor advisable under present conditions.
>
> A point of considerable importance is that of health education in respect of food. No articles of diet are recommended unless it is known that such articles are available in the area and within the purchasing power of the people, or can be grown in the area. Milk, meat and fruit are extremely scarce, thus emphasis is placed on the necessity and importance of home-grown vegetables, especially legumes.
>
> This advice is invariably given to the patient at the time of receiving medical attention so as to arouse a sound and stable incentive for home gardening. For those requiring further advice and guidance in vegetable gardening the field worker (health assistant) is available and, by prior arrangement, visits the home."

The main features of the Botha's Hill Health Centre services may be summarized as follows:

- the compact lay-out of the out-patient department with close relationship of sections,
- the simplified admission procedure with specifically designed clinical record card and filing system

continued

which provide readily available records (for routine use, evaluation studies, research etc.),

- the preliminary interrogation of patients by the receiving nurse at the Health Centre prior to the doctor-patient interview,
- the emphasis on domiciliary treatment and the avoidance of hospitalization,
- the high degree of responsibility given to nurses in domiciliary and sub-centre activities as well as at the Health Centre,
- the integrated use of nurse-aides, particularly of young women domiciled in the area,
- the general educative character of the Health Centre services with special and continuous emphasis on nutrition education,
- the exceptionally low expenditure on drugs and hospital treatment, and the Health Centre services generally,
- finally, the close functional relationship between the Health Centre and the promotive health services and facilities provided by The Valley Trust.

Botha's Hill T.B. Settlement

This is an autonomous organization providing for convalescent cases of tuberculosis from Natal and further afield. It was established in 1952 by Toc H (Natal) on the 60 acre (24,2 ha) site originally set aside by the author for a Tuberculosis Colony within the framework of The Valley Trust, but later released to Toc H for independent development.

Due to circumstances beyond the control of The Valley Trust, principles of the Settlement's development were allowed to be determined by the demand for convalescent beds by the State Tuberculosis Hospital in Durban. This defeated the original intention of only accommodating members of the local community in small units designed as extensions of the home where the member, or members of the family, unfit for domiciliary treatment, could be cared for within an educative framework.

For the purposes of this study, the Tuberculosis Settlement plays a very limited part, as over 95% of its patients are from areas very remote from Botha's Hill and unable to benefit from the local, integrated, domiciliary, educative services provided by the Health Centre and Valley Trust.

Medical care was given by Health Centre Medical Officers for many years (in an honorary capacity) until the T.B. Settlement was able to employ its own Medical Officer. Nutrition Education has been provided for its patients by The Valley Trust from the outset and a weekly

visit is paid by groups of T.B. patients to the Nutrition Education unit and demonstration gardens to encourage understanding of their nutritional needs and the soil's potential for meeting these needs. There are 246 beds, most of which are constantly occupied. Only adult males and children are admitted. The Settlement is financed mainly by grants from the South African Tuberculosis Association (SANTA), and the State and Province on a formula based on bed-occupancy which is used by Mission hospitals throughout South Africa.

Attempts have been made to provide follow-up care for discharged patients but without success owing to the homes of the majority being scattered at distances in Natal too remote from the Valley to justify the administrative and transport problems involved. Locally domiciled patients discharged from the wards of the T.B. Settlement are referred to the Health Centre and Valley Trust for further care. These form a very small percentage of admissions to the T.B. Settlement owing to the readily available out-patient and domiciliary services of the Health Centre and the special facilities it provides for the conveyance of cases, unfit to travel by public transport, to and from their homes.

The views of the author on the prolonged hospitalization of cases of tuberculosis away from their areas of domicile, are summarized in the following comments contained in his Health Centre Annual Report for 1952, submitted to the Minister of Health:

"Adult Admissions to Settlement:[1]

The admission to the Settlement of adult patients not normally domiciled in the area is deprecated, for the following reasons:-

(i) Being strangers, they cannot be expected to have an interest in the community and its people to anything like the same extent as in the case of persons normally domiciled here. There is, furthermore, a danger of the introduction of undesirable habits and occupations to this rural community, as yet relatively untouched by urban influence. This aspect will have force when adult patients begin to be sent to the Settlement next year.

(ii) The isolation of patients for considerable periods from their own environment - especially from their family ties - can only lessen any sense of responsibility towards family and home. A locally domiciled patient has the advantage of being in constant touch with his own people during his stay in the Settlement. He is thus more likely to preserve both domestic responsibility and disciplinary relationship between parent and children - a matter of increasing importance today.

(iii) A patient's family cannot observe for themselves, and benefit from, what is being done for their sick member, nor contribute towards his or her recovery, if in a Settlement away from the home area.

(iv) A locally domiciled patient eventually returning to his kraal has the further advantage of the Health Centre's district nursing service, which maintains an interest and keeps the patient and his family under observation: this is entirely lost to an "imported" patient, who will, most probably, be returned to the same conditions from whence he came and be without any further help or supervision."

The position with regard to the admission of patients is the same (1976) but with recent change of official policy, which now favours domiciliary treatment, it is expected that the problem will be resolved.

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[1] From the Botha's Hill Health Centre Annual Report for 1952, p. 8. (Stott, 1952).

CHAPTER VI

SOCIAL SERVICES AND FACILITIES

THE VALLEY TRUST

Principles underlying The Valley Trust programme

With the establishment of the Botha's Hill Health Centre services as the spearhead to the overall socio-medical experiment, a channel of access to the community had been provided for furthering the wider promotive health programme of The Valley Trust. The principles underlying the central conception of The Valley Trust, its objectives and methods, were indicated earlier but before outlining the main projects in The Valley Trust programme, those basic principles, which are regarded as fundamental to all its developments, need to be emphasized.

The first is the vital importance of encouraging the initiative and sense of responsibility of the people. As will have been noted in the development of the Health Centre services, which evolved as an integral component of the overall socio-medical experiment, all projects were designed, by the author, to gain the understanding, co-operation and active participation of the people. Compulsion, as being totally at variance with this policy, was carefully avoided and care was taken to ensure that developments proceeded at a pace consistent with the ability of the community to comprehend and benefit from them.

The second basic principle is that the maximum use should be made of local human and environmental resources. Adherence to this has had wide implications, from a return to more satisfactory breast-feeding habits with less dependence on commercial baby foods, to the recognition of soil potential for protective food production without the introduction of costly artificial aids. The relief of malnutrition by short-term measures, whether cash or kind, without focussing the main efforts on educative and preventive long-term measures, was considered as likely to aggravate the situation, by removing the stimuli to a realistic approach to the problem, not only to the recipient but, equally important, to the benefactor.

The policy of evoking positive responses and co-operation and the encouragement of genuine self-help is deeply embedded in the thinking and work of The Valley Trust. It likewise takes cognisance of the basic stability and cohesion in Zulu society that derives from many traditional and cultural customs and institutions. The Zulu kinship system, for instance, undoubtedly underlies the relative integrity of the Zulu family that exists today in the face of many disruptive influences resulting from industrialization and Westernization. A further underlying factor is the influence of the interpreter of ancestral spirits, the isangoma, who provides a powerful stimulus to family consciousness and obligations.

Recognising that the powerful influence of Zulu custom and tradition is not readily lost and exists to a

surprising and significant degree in many Westernized Zulus, it has been Valley Trust policy, from the outset, to introduce new ideas and projects to the area only after much careful thought and investigation.

The Health Centre medical services were readily accepted by the people, as they fulfilled an urgent "felt need", but para-medical and other promotive health services, the need for which was less apparent to the community, required to be implemented with great care and circumspection, as will be noted later in such examples as the introduction of fencing for the protection of fruit and vegetable gardens. The value of the opportunity for communication between doctor, or nurse, and patient, as exists at the time of the clinical interview, has already been stressed. The opportunity it provides for motivation of the patient towards improved dietary habits, with implications for change in attitudes towards food quality, methods of food preparation, food production and, ultimately, benefit to the environment generally, should not be undervalued.

Nutrition Education programme

From the very outset patients were given nutrition advice in the clinics by the medical staff, the principal attack being made, as indicated earlier, on the excessive consumption of processed, refined carbohydrate foods to the exclusion of vegetables, legumes, fruit and other health-giving foods.

One of the earliest features of importance in

The Valley Trust nutrition education programme was the provision of an open-air cooking shelter alongside the Health Centre (Fig. 11). This was designed with intersecting walls so as to provide, in the angles, protection from varying winds. Here, over an open fire, using traditional three-legged pots, simple "talks" on dietary matters were given to patients. These included demonstrations in cooking techniques designed to avoid the destruction and loss of nutrients by faulty cooking practices; also the preparation of dishes from legumes and other locally grown products, valuable in the feeding of children and infants. These foods were encouraged in place of the various popular, but nutrient-deficient, unsuitable dishes in common use and consisting principally of refined carbohydrate and fat.

Fig. 11 Nutrition Education. Open-air shelter alongside Health Centre, provided by The Valley Trust for cooking demonstrations.

In 1963, a rondavel with improved facilities for nutrition education was erected in a commanding position overlooking a well-established demonstration vegetable garden (Fig. 11). The building was of simple construction, traditional in character, with an open, centrally situated hearth, with the popular three legged-pots, around which, in an atmosphere of relaxed informality, some 15 to 20 patients could sit whilst nutrition "talks" and demonstrations were given and questions answered. The side of the rondavel overlooking the demonstration garden was left open for convenience of instruction and demonstration. This also served the additional purpose of keeping constantly in view the variety of vegetables growing on the terraces of the flourishing gardens. Here it could be seen that even in the dry winter months health-giving vegetables could be produced, using only those methods and means that are available to all members of the community.

Demonstrations were thus of the simplest nature and where possible followed traditional patterns so that no essentials in equipment were beyond the means of the poorest members of the community. The services of the agricultural staff were readily at hand for those wishing to seek advice and assistance in establishing gardens.

Incentive projects and demonstrations in close proximity to, and visible from, the rondavel, included a fresh produce market and maize grinding mill, poultry deep-litter runs, compost heaps, a tree nursery (for fruit and windbreaks) and a terrace of vegetable seedlings for free distribution to Valley gardeners.

Fig. 12 Nutrition Education. An open-sided rondavel on a site overlooking The Valley Trust demonstration vegetable garden. The Valley Trust nutrition educator in informal discussion with patients who have been referred from the Health Centre.

As the unit was now a little too remote from the Health Centre for members of the nursing staff to continue the nutrition education demonstrations and, furthermore, the limitations of Valley Trust finance, at the time, precluded the employment of a trained nurse as nutrition educator, a woman of good standing in the community, reasonably well educated and of suitable personality and character, was selected and trained for the purpose. This link with the highly conservative community proved to be a valuable step towards gaining the interest and trust of the people.

The greater capacity of the new unit along with better facilities for the keeping of patient records, made it possible to extend the scope of nutrition education activities appreciably. These now included regular weekly visits of large groups of patients from the adjacent Tuberculosis Settlement, and the reception of visiting groups of students, nurses and others as observers. The main purpose of Valley Trust nutrition education has always been to encourage firstly, the use of unprocessed foods of good nutritional value that are within the abilities of all members of the community to grow or purchase and, secondly, to demonstrate methods of preparation that cause minimal loss of essential food nutrients. The following are among the main unprocessed and locally grown foods that have been encouraged by the nutrition educator:

legumes
peanuts
dried mealies (whole)
whole grain mealie meal ("straight run")
cabbage
kale
Swiss chard
wild spinaches (imifino)
beetroot and beetroot tops
pumpkin and pumpkin vine tops
madumbis and madumbe leaves
carrots
tomatoes
sweet potatoes
fruit
poultry
milk and fish

The excessive use of the following has been strongly discouraged, particularly when these items displace the foods in the previous list:

commercial sugar
white flour
white bread
biscuits, scones and cakes
synthetic soft drinks
sweets and jams
sweetened condensed milk, etc.

Bearing in mind the taboos surrounding the consumption of eggs, encouragement of their use in individual cases, such as in the treatment of kwashiorkor and pellagra, was left to the discretion of the nutrition educator. From the outset red meats have not been encouraged for reasons of escalating costs, the economics of land use for animal protein production and the adequacy in quality and quantity of amino acids available in the large variety of vegetables. Legumes and pulses that can be grown in the area have received particular emphasis.

Unsaturated fats (vegetable oils) have been encouraged throughout in place of saturated fats, such as suet and dripping. The excessive frying of foods has been vigorously discouraged, especially where infants and children are concerned.

The presence of this unit in the centre of the main demonstration vegetable garden of the agricultural section, and in close proximity to various agricultural incentive projects such as the Home Produce Market, Maize Grinding Mill, deep litter poultry runs, composting and

gardening demonstrations, undoubtedly stimulated many patients to seek Valley Trust guidance and help in establishing their own vegetable and fruit gardens.

Home visiting by the nutrition educator in order to follow up discussions and demonstrations in the domestic environment, has been from the earliest days a valuable feature in the nutrition education campaign and has complemented the nutrition teachings of the Health Centre and district nurses.

Up to 1970, nutrition education had, for reasons given earlier, been kept at a simple level; nevertheless it had contributed towards raising the nutritional standards in the area. This was in spite of the fact that its scope was severely limited by the lack of suitably qualified personnel to handle nutrition problems associated with the more severe type of disability. A large proportion of the patients attending the Health Centre had consequently been beyond the capabilities of the non-medically-trained nutrition educator. Two aspects of the nutrition education programme had during this time come into sharp relief. Firstly, that a nutrition education team requires to be part of a medical unit or should function in proximity and in close co-operation with one; and secondly, that a fully trained nurse as nutrition educator is the ideal person to achieve this integration.

Prior to 1970, the nutrition education programme of The Valley Trust, as well as being hampered by the lack of a suitably qualified nurse, also lacked adequate accommodation, suitable equipment and the funds to meet

its needs.

However, the situation changed in 1970 when the scope and effectiveness of The Valley Trust nutrition education programme was greatly increased by the opening of a new and well equipped unit (Figs. 13 & 14). This new development was made possible by a gift from the South African Sugar Industry which also provides an annual subsidy for the running of the unit and has enabled The Valley Trust to employ two fully qualified State-registered nursing sisters to extend its activities more effectively and to provide a more integrated service.

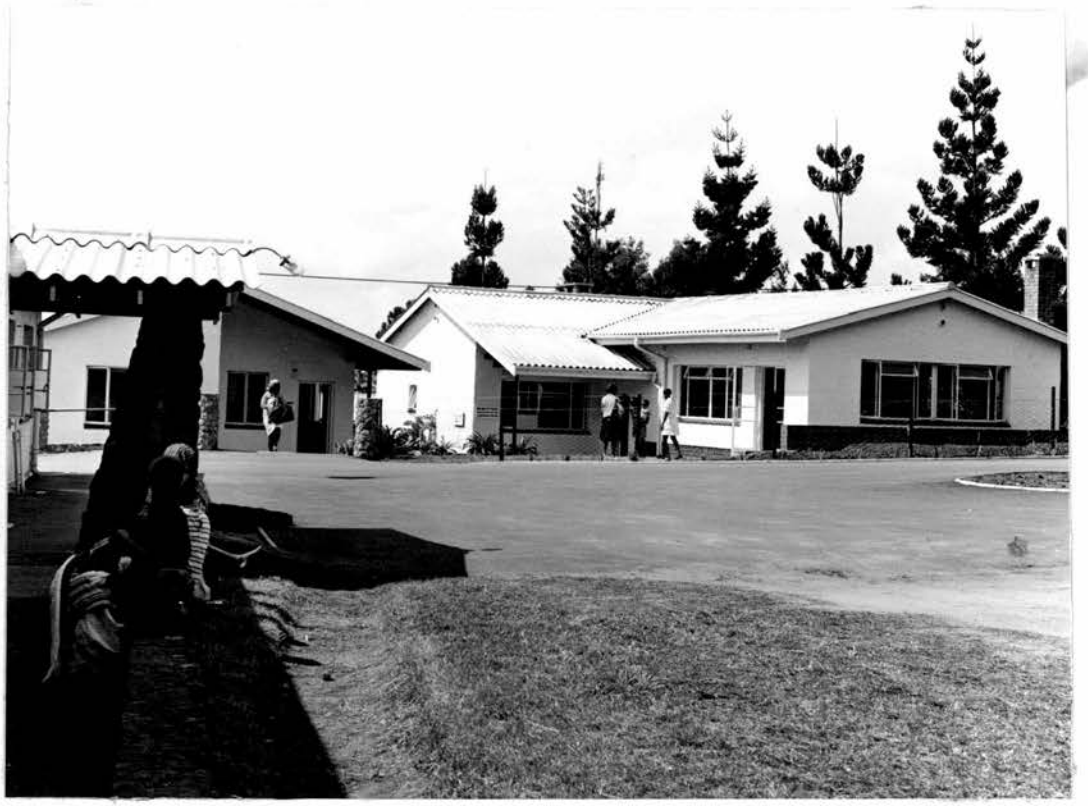

Fig. 13 Demonstration Section of the Nutrition Education Unit (right) alongside which (to right) is a small all-the-year-round productive vegetable garden. Adjacent to the unit is the Community Liaison Section and to the left, in the foreground, the entrance to the out-patient clinics of the Botha's Hill Health Centre.

These developments marked a new phase in the nutrition education programme, a phase in which much of the planning and work of the past twenty-one years matured. They consolidated and extended the working relationship that has been, from the earliest days, in operation between the medical, nutrition education and agricultural services of The Valley Trust and emphasize, in a clear and meaningful manner, the realism of this partnership in which protective food production functions as part of a health service with wide implications for improved attitudes towards soil use and, ultimately, environmental rehabilitation.

Fig. 14 Nutrition Education Unit - Demonstration Section. Interior view showing the Nutrition Educator (on lower level) interviewing a small family referred from the Health Centre. On upper level a food preparation demonstration is being given by the Cook Demonstrator: to the right is an area (partially visible) for accommodating visiting groups.

This valuable gift was the direct result of the following comments by the author in The Valley Trust Annual Report for 1968:

"... foods containing specific nutrients known by science to be essential for the maintenance of health, are being popularised. Thus a demand, based on the biological needs of the individual, is being fostered in contrast to a demand based on economic expediency. I do urge that The Valley Trust always adheres to the extremely important and fundamental principle that the production of food should be guided by the actual nutrient needs of the people as determined by the science of nutrition, and not by economics."

In this context reference was made to the "tremendous increase" in the consumption of commercial sugar by the rural Bantu which, according to figures supplied by the South African Cane Growers' Association, had increased from 6 lbs. (2,7 kg.) per head per year in 1953, to 60 lbs. (27 kg.) per head in 1964. The author continued:

"... As a cheap and easily digested form of energy, sugar has its uses but as, and I quote from Human Nutrition and Dietetics by Sir Stanley Davidson and Dr. Passmore (1966), 'it lacks every nutrient except carbohydrate, its very attractiveness is a danger in that it tends to displace other more nutritious foods from the diet.' Likewise, in agriculture, it may have its uses as a cash crop but if it displaces foods 'necessary for the health of the people', it will constitute a major health hazard.

For the present and foreseeable future, food production in these developing areas should obviously be focused on meeting the extremely serious lack of protein and vitamins in the Bantu diet. The

alternative is a cul-de-sac of ever-increasing and costly medical services." ....

"It is an appalling fact that with the high incidence of malnutrition continuing in the Valley and its environs there lies in its hills and vleis vast untapped potential for the production of urgently needed foods. Ignorance and poverty are still at the root of the problem, but particularly ignorance with its wide implications."

Following this challenge, senior officials of the South African Sugar Association visited The Valley Trust and, recognising the dangers of misuse of their commodity, expressed their willingness to assist The Valley Trust in consolidating and extending its nutrition education activities.

With the opening of the new unit a greater number of patients could be accepted from the medical clinics and more effective nutrition education given. Furthermore, and of no less importance, a far more comprehensive and valuable experience became available for the visiting "observer trainees" and "observer" groups, of whom approximately 60% have been members of the nursing profession, sent officially, in groups, from Durban and Pietermaritzburg hospitals and Medical Missions in Natal.

As would be expected, the value of home visits and community demonstrations has been greatly enhanced by the leadership of a nutrition educator having the training and experience of a nurse, and thus the ability to relate dietary habits and ill health in the practical situation of the domestic environment.

These community demonstrations at which the

agricultural and community liaison sections are represented, are often conducted in areas far remote from the Health Centre and Valley Trust thus furthering the reach of The Valley Trust nutrition education campaign and the nurses' contact with the community. (Fig. 15).

Fig. 15 A nutrition education talk and food preparation demonstration to personnel and pupils of an Isangoma Training School in the depths of the Valley, with members of the local community participating.

Agriculture

Parallel with the provision of medical and nutrition services have been the development, by The Valley Trust, of a number of agricultural incentive projects aimed at fostering the home production of a variety of medically recommended foods such as vegetables, legumes, fruits, poultry and fish. Production of these is being encouraged at the domestic vegetable garden level as a means of supplementing the daily dietary with protective foods. The sale of surplus produce is regarded as of secondary importance. Thus a demand, based on the biological needs of the people is being aimed at in contrast to a demand based on economic expediency.

From the outset it has been fundamental to Valley Trust policy that the production of food should be guided by the actual nutrient needs of the people as determined by the science of nutrition, and not by economics. Valley Trust agricultural activities are thus promoted as a health measure, or service, and are confined, at the present stage of its development, to the production of foods containing nutrients seriously lacking in the daily diet of the community.

A people with a poor agricultural tradition, soil misuse and neglect, with accelerating loss of fertility aggravated by recurrent drought and destructively precipitate rainfall, constituted challenges that had to be faced if a realistic and constructive approach to the problem of malnutrition in the area was to be adopted.

A programme was required that not only aimed at the immediate nutritional needs of the people, but also at the rehabilitation of the soil and environment generally so as to meet the future demands and requirements of a rapidly increasing population.

Temporary measures of expediency such as food distribution schemes and food fortification, likely to stultify human initiative and effort and the care and utilization of natural resources, have had no part in the programme; nor have methods of agriculture requiring the importation to the area of inorganic commercial fertilizers, insecticides, pesticides and other similar agencies, beyond the financial resources of the people and their ability to understand the implications of misuse relative to the ecology of soil and environment.

The return of organic matter being fundamental for the restoration of fertility to the humus-impoverished soils of the area, a system was adopted which would readily improve soil structure and texture, enable it to absorb and retain moisture, improve its chemical content and thus establish the soil conditions necessary for microbial activity essential in the maintenance of soil fertility.

This was achieved by the composting, above and below ground, of any available and suitable organic matter such as weeds, leaves, domestic waste, fowl manure and grass. Several hardy drought-resistant fodder grasses were introduced initially into the Valley to serve the dual purpose of windbreaks and soil rehabilitation.

The earliest agricultural foundations of the overall socio-medical experiment were laid at the time of the opening of the Health Centre (Fig. 16(a)) where it stood, isolated, as a challenge on land as poor and infertile as any in the area (Fig. 2, p. 4). In the vicinity of the building, for visiting patients to witness, the resident staff were encouraged to establish their own domestic vegetable gardens (Fig. 16(b)) using only methods and means available to all Valley dwellers regardless of economic status. It is considered that these examples, particularly as they were in early support of the intensive nutrition propaganda in the clinics, made a material contribution towards gaining initial community interest. Concurrently with these early vegetable gardening activities, a variety of other incentive projects were launched (Fig. 16(c) and (d)). These included a tree nursery for the free distribution of fruit-bearing trees and trees suitable for wind protection; experimentation with a variety of grasses; demonstrations on contouring and the arrest of soil erosion; experimentation to determine the most suitable legumes for the area and the installation of a hand mill to encourage the use of unsifted mealie meal.

In 1952 the first steps were taken towards establishing the main demonstration area (Fig. 16(e)) approximately 2 acres (0,8 ha) in extent, from which The Valley Trust agricultural section operates today. Situated alongside the Zulu Reserve Road, adjacent to the Health Centre, on a sloping, eroded hillside devoid of top soil, and totally infertile, it presented a major

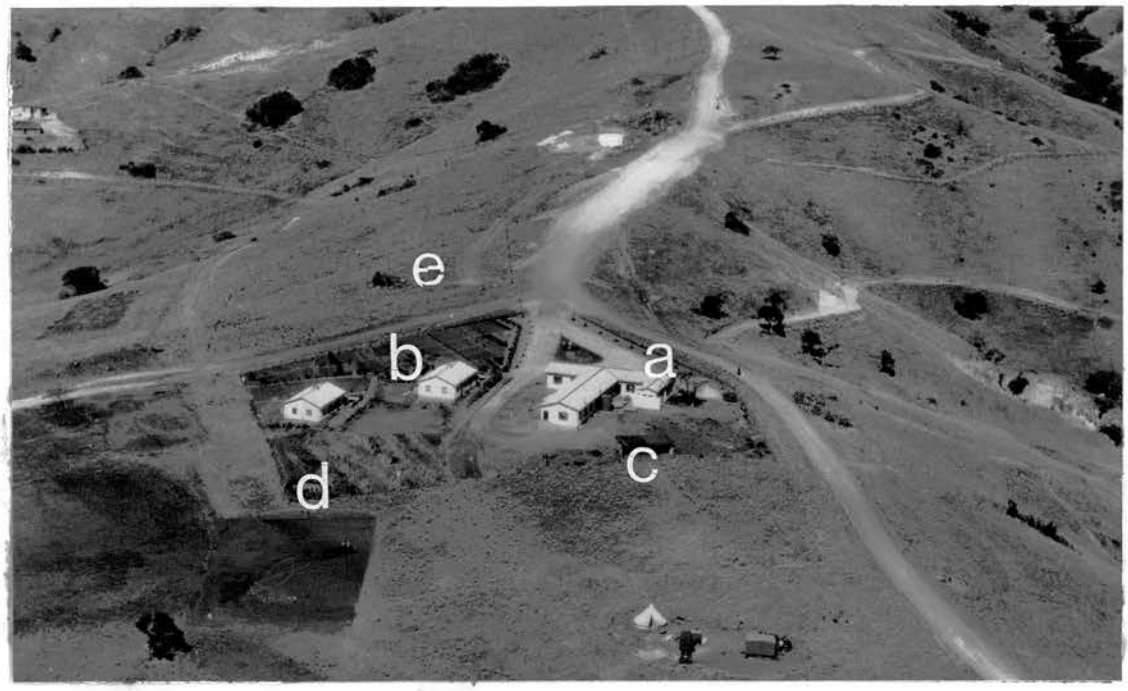

Fig. 16 Aerial view of Health Centre and surroundings in 1952. (a) Health Centre, (b) staff vegetable gardens, (c) tree nursery, (d) experimentation with grasses and legumes on contours, (e) site allocated for main demonstration vegetable gardens.

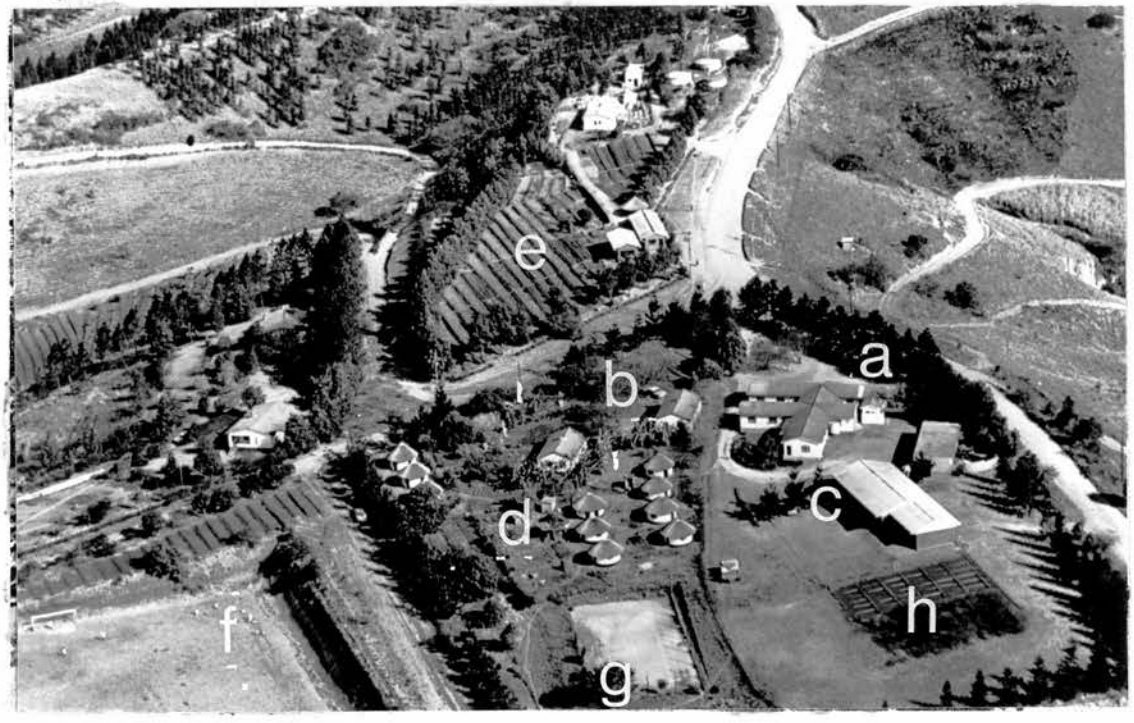

Fig. 17 The same view 1967. (a) Health Centre, (b) staff gardens and quarters, (c) The Valley Trust administration block, (d) additional staff quarters, (e) main demonstration vegetable garden overlooked by Food Preparation Unit and Maize Grinding Mill (see also Fig. 18 for greater detail of (e)), (f) playing field, (g) tennis court, (h) Trenching-Fertilizer Experiment (Latin Square).

challenge to Valley Trust rehabilitation techniques.

Throughout the ensuing years, many thousands from both the Valley and further afield have witnessed the transformation of this land into a highly productive, terraced vegetable garden, again by methods and means available to all Valley dwellers and which are not beyond their understanding, available time and resources (Figs. 17(e) and 18). This development, which has demonstrated so decisively the potential for food production in soil comparable with the worst in the area, has enabled doctors, nurses and nutrition educators to recommend, with conviction and responsibility, those protective foods which are essential for the maintenance of health.

Other services and facilities provided by The Valley Trust

Other services and facilities provided by The Valley Trust with a view to raising nutritional standards include:

(a) demonstration gardens at strategic points throughout the area;

(b) demonstration dams for water conservation and fish culture - fish culture is being encouraged as a practical means of meeting the serious lack of protein in the diet, especially in infants and children;

(c) home visiting to advise and guide in vegetable gardening matters;

(d) a fund to enable individuals of reliable character to acquire protective fencing and other essential materials for vegetable gardening, on an interest-free long-term repayment basis;

Fig. 18 The main demonstration garden as it appeared in 1967, overlooked by the Nutrition Education Food Preparation Unit from which, throughout all seasons, patients were able to observe the highly productive terraces.

(e) as for (d), but without cost, to those who, through disablement, loss of bread-winner etc., are known to be unable to reimburse The Valley Trust - in such instances the erection of fencing and initial establishment of vegetable gardens is usually also undertaken without cost to the recipient;

(f) distribution of top quality seed and seedlings, at appropriate times, to handicapped families;

(g) demonstrations on the deep litter system for poultry keeping and its value to vegetable gardening;

(h) a maize grinding mill to enable the community to consume 'straight-run' maize, their staple diet, with all nutrients intact;

(i) a Home Produce Market to stimulate home production of surplus crops for sale and widen economic opportunities;

(j) paid employment of unoccupied children during school holidays on agricultural projects;

(h) encouragement of school gardens.

Diffusion of Valley Trust techniques - "Observer Trainee" courses

In recent years The Valley Trust has been faced with an important challenge from rural medical missions and other organizations. This has been to provide opportunities for suitable personnel to spend varying periods at The Valley Trust in order to gain insight into its co-ordinated approach to the problem of malnutrition and the techniques used.

Within the limitations of finance, facilities and technical staff, a promising start has been made on this educational project with the acceptance, between 1964

and July 1976, of 168 "Observer Trainees" from throughout Natal and beyond its borders (Fig. 19, p. 130).

Whilst courses are intended primarily for members of the nursing profession and qualified agricultural demonstrators, these facilities have been extended to others engaged in community welfare, such as auxiliary nurses, nutrition educators, health educators, school teachers, clergymen, evangelists and social workers. Provision has also been made for "Labourer Trainees". These follow a six weeks domestic vegetable gardening course, during which period the trainee attends nutrition education talks and demonstrations both at The Valley Trust and at homes in the community.

For the main group, the course includes:

(i) observation of actual cases of malnutrition at the Medical Clinic;

(ii) observation of patients (particularly mothers and infants) being taught correct dietary habits by the Nutrition Educator, who is a fully qualified State-registered nurse;

(iii) observation, and demonstration in a simple and practical form, of preparing and cooking food without destroying essential nutrients;

(iv) observation and demonstration of vegetable gardening, including terracing, deep tillage, trenching, composting, making seed beds, tree planting and transplanting;

(v) observation and demonstration of deep-litter poultry keeping and compost making;

(vi) observation and demonstration of the value of conserving water, and at the same time providing

continued

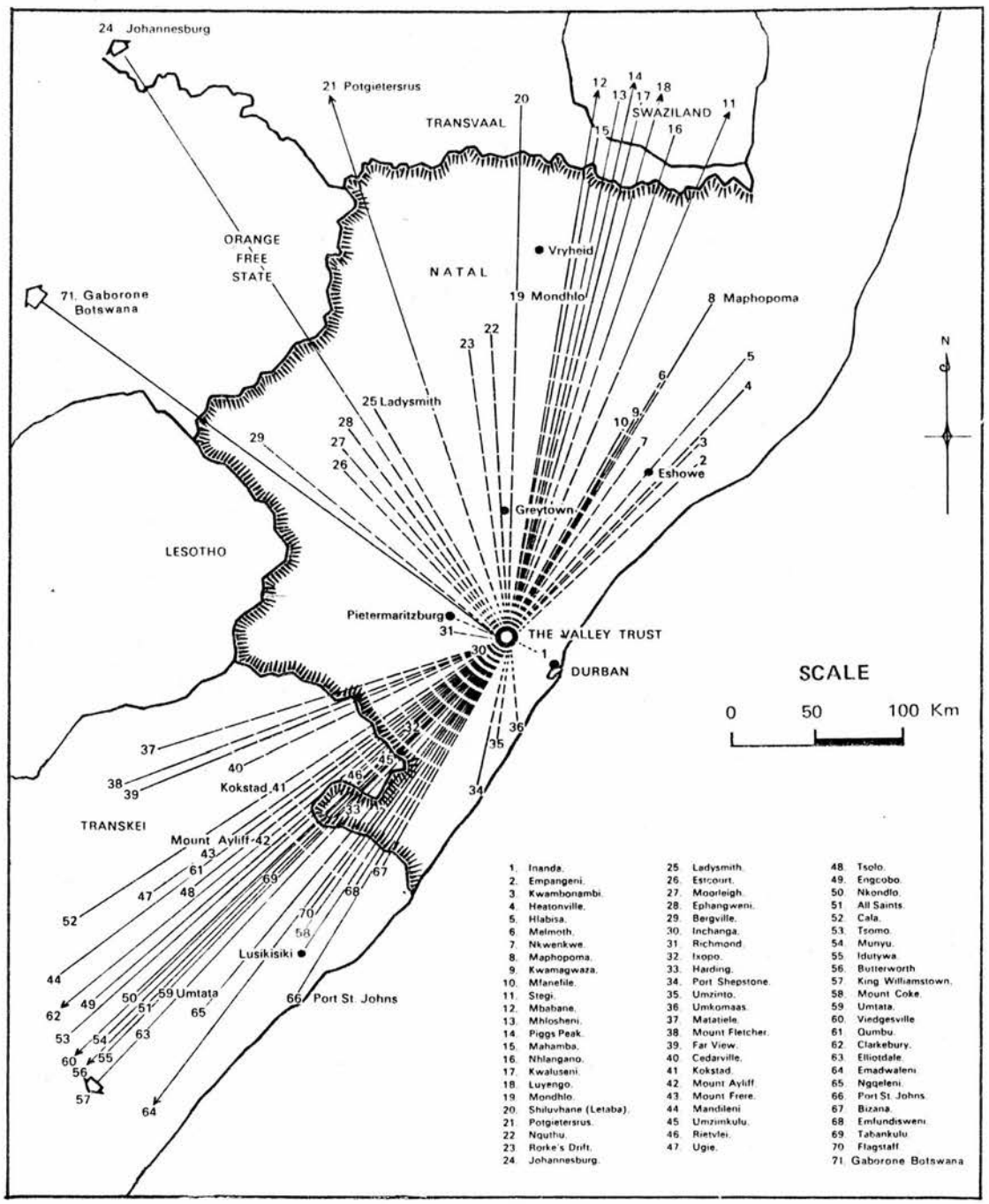

Fig. 19 Centres from which "Observer Trainees" and "Labourer Trainees" have been received at The Valley Trust.

(vi) (continued)

another source of food (protein), by the introduction in suitable places, of small fish dams;

(vii) observation of agricultural developments in the Zulu Reserve, home visiting and, by arrangement, practical demonstrations given by the Nutrition Education team in the home;

(viii) attendance at illustrated lectures given by the medical, nursing and administrative staff to visiting nurse, students and other appropriate groups;

(ix) informal talks and discussions with members of the staff on the methods and philosophy of The Valley Trust, relative to individual local problems in the home districts of those attending courses.

It is emphasized, at the time of acceptance of trainees that it is desirable for them to be returning to a Medical Mission, or an organization with a medical component, where the broad principles of Valley Trust health promotion, and methods of approach to a community, can be applied without undue fragmentation.

In the context of outside interest in the activities of The Valley Trust, considerable encouragement has been derived from the response of the nursing profession. This is manifest in the popularity of organized one-day visits by groups of trained and student nurses from 18 hospitals and training colleges in the Durban and Pietermaritzburg areas, over the past 15 years. Records reveal that over this period, 6 025 trained and student nurses have been received at The Valley Trust in

279 groups. Programmes for these visits embrace a lecture, the showing of coloured slides on the work of The Valley Trust and visits to the Nutrition Education and Agricultural Sections. The main objective is to stimulate interest in nutrition and awareness of the great potential that lies in the hands of the nurse for motivating patients towards better dietary habits. It is highly probable that a large number of these nurses, both Black and White, are destined to work in areas similar in character to that of the Valley of a Thousand Hills.

Also highly relevant to the socio-medical activities of The Valley Trust have been visits by university students over the same period from the Faculty of Medicine, Durban (512) and the Departments of African Studies (318) and Agriculture (87). Programmes for these visits follow the same pattern basically but with modifications appropriate to the disciplines concerned.

Social, recreational and other facilities

In response to requests of community leaders, The Valley Trust provided, at an early stage, a recreational field and sports pavilion around which have developed a variety of recreational, cultural and non-denominational religious activities. These have emerged as the result of the initiative of The Valley Trust Sports Association in 1953, and later, in conjuction with the Y.M.C.A. and Y.W.C.A. Clubs in 1956, who together assume full responsility for the organization and control of these amenities. The community has been represented on these bodies from

their inception. Main activities centre on football, music (choral and instrumental), dancing, boxing, tennis, school sports and inter-school activities.

The facilities are filling a strongly felt community need following the breakdown of traditional forms of recreation and relaxation, and, furthermore, promote a good relationship and means of communication between Valley Trust and Health Centre personnel and the community.

Response to Nutrition Education and agricultural services

The response of the Valley people as a whole to the promotive agricultural services of The Valley Trust has been disappointing considering the generous and imaginative opportunities which have been made available to them, either free or at token cost. A small number, on the other hand, have responded most encouragingly and fully justify the agricultural programme.

The response to nutrition education has, however, exceeded expectations and appears to have made a strong mark on the community. For instance, considering the deeply rooted theories of causation of ill health, it is highly significant that in increasing numbers, mothers are coming unprompted direct to the Well-baby Clinic of the Nutrition Education Unit to ensure that their infants and children are being correctly fed.

CHAPTER VII

RESEARCH

Research programme drawn up in 1954

In the knowledge that technical assistance, education and medical programmes have frequently failed where they have ignored the cultural background to which they are applied, it was early resolved that the promotion of research should take a central place in Valley Trust planning (Stott, 1957). This was fundamental to a socio-medical project facing the problem of adapting to a technologically undeveloped society the scientific conception of a holistic approach to disease.

In a research programme drawn up in 1954 the late Professor J.D. Krige, foundation member of The Valley Trust and Head of the Department of African Studies, University of Natal, envisaged three main fields for research:

- the general cultural background, as modified by the impact of Western civilization;
- specific problems of health, disease and nutrition in this cultural context; and
- evaluation studies in order to discover the effectiveness of The Valley Trust activities.

In describing The Valley Trust research programme Professor Krige wrote as follows:

> "... Sometimes the customs and goals of a society may be so restrictive that men's purposes are frustrated and the development of their bodies and minds is stunted. Taboos, fear and anxieties reduce men to ineptitude, and expose them to severe tensions, pains and deprivations. Their social heritage fails perhaps to provide them both with the knowledge and tools and with the opportunities and incentives to make the best use of environmental resources, teaches them to rely upon the wishful thinking of magic instead of effort, or prevents them from maximising production for fear of becoming the targets of suspicion and witchcraft accusations. These and many other sources of social and hence also physical ill-health cannot be combated by medicines alone"...
>
> "The Valley Trust is particularly concerned to devise means of widening opportunities, providing new fields of achievement and promoting a sense of responsibility and reliance upon self-help. It frowns upon imposition from above and believes that true progress can come only from the people's contributory responses. To evoke such a response, its schemes must capitalize on existing knowledge, capacities and institutions and take account of actual needs"..... "Such a programme implies not merely free choice on <u>their</u> part between alternatives that are meaningful to them, but also careful study by <u>us</u> of their needs, institutions and aspirations. For we must be sure that our measures and guidance will in fact meet their needs, promote the more efficient functioning of their society and thereby create conditions for better health and well-being." (Krige, 1957)

To this end various research projects have been undertaken, some of which, namely those concerned with the

general cultural background have been conducted under the direction of the Department of African Studies, University of Natal. Research experiments connected with specific problems of The Valley Trust, such as how to improve soil fertility and secure better yields, have been initiated by interested and qualified members of The Valley Trust, sometimes in consultation with the Department of Agriculture of the University, but supervised largely within The Valley Trust itself. On the other hand, some investigations have been initiated by University departmental heads, who have directed student research to problems relevant both to their own disciplines and to Valley Trust needs. Evaluation studies have been undertaken at the instigation of the Chairman of The Valley Trust or been initiated by some member.

The general cultural background: studies in social anthropology

At an early stage in the development of the socio-medical project, the Department of African Studies of the University of Natal was able to interest the Nuffield Foundation in providing three Fellowships for the specific purpose of training Africans in anthropological research techniques. The decision to carry out this training in the Valley of a Thousand Hills was based on several considerations, among which were the interest of the Department in the socio-medical project, the proximity of the area to Durban and the fact that the people of the Valley represented a rural people bordering on a fast-developing industrial area, with problems associated with

week-end commuting. Research carried out under the Nuffield grants comprises the largest and most impressive group of research projects that have been undertaken in the Valley.

In 1955 A. Vilakazi, a graduate of the University of Natal, entered the field in order to make a general social anthropological study of the Nyuswa people in the Valley[1]. The results of his research were embodied in his Ph. D dissertation, Zulu Social Structure and its Dynamics Today, and published in his book Zulu Transformations (1962) and an article, A Reserve from Within, in African Studies (1957)[2]. In 1957 the second Nuffield Fellow, M. Malie, a Zulu woman, began fieldwork on the sociology of Zulu diet, but after submitting a preliminary report on crops and foods she left to take up an appointment in Swaziland.

Many features of interest to The Valley Trust programme emerged from these studies, such as the persistence in the society of strong ties of kinship, the appearance of new problems in family and marital relations and a serious dichotomy between Christians and traditionalists affecting relationships at economic, political and social levels. It was reported that practically everyone tried both European medicine and traditional remedies at the same time and that there was a tendency to avoid the Health Centre when mystical causes were thought to operate,

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[1] A. Vilakazi now holds the position of Professor of Anthropology at The American University, Washington, D.C.

[2] For a full list of publications and reports resulting from The Valley Trust research programme, see pp. 150-152.

such as witchcraft and sorcery, ancestral anger, ritual impurity and breaches of taboos. Pervading every aspect of social life was the problem of the absence, most of the time, of the men at urban labour centres.

The next project, Migrant Labour and its Effects on Tribal and Family Life among the Nyuswa of Botha's Hill, arose out of these earlier studies and was undertaken by M.B. Mbatha in 1958. His results formed the subject of a dissertation for the M.A. degree of the University of Natal[1].

In 1964 H. Sibisi[2] of the University of Natal was allowed to take up the unused portion of M. Malie's fellowship for the purpose of investigating Zulu conceptions of disease and medical practices in the Valley and the manner in which they relate to the teachings of the Health Centre. She spent the period 1964-1969 intermittently working in the Valley and was fortunate in obtaining a scholarship to enter Cambridge University, where, in 1972, she was awarded a Ph. D degree for her dissertation, Health and Disease among the Nyuswa Zulu (an ethnographic account). Some of this material appears in her book, Zulu Cosmology, which is in the press.

On first entering the field, Dr. Sibisi had made a study of a particular area and the lineages or descent-groups within it, the disposition of kraals and fields, the part played by the lineage or descent-group in land

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[1] M.B. Mbatha is now lecturing in Anthropology at an American University.

[2] Dr. H. Sibisi is at present on the staff of the Department of African Studies, University of Edinburgh.

allocation, the general social conditions (numbers away on migrant labour, proportion of Christian to traditionalists and many other factors affecting conditions of life within the area). In view of the increasing influx of population into the area and problems arising therefrom, it was decided in 1968 to bring the earlier area study up to date. Dr. R. Preston-Whyte of the Geography Department kindly consented to assist by mapping the area and the fields within it, While Dr. Eleanor Preston-Whyte, Senior Lecturer in Social Anthropology in the Department of African Studies joined Dr. Sibisi in the onerous task of completing the survey. One result of this collaboration has been a valuable joint publication embodying the first accurate account of the pattern of land-settlement in a Zulu area; the relationship of lineages to the land; the sub-division of land over the years; and the manner in which newcomers are absorbed into the community (see Preston-Whyte and Sibisi, 1974 listed on p.150). Apart from its importance to social anthropology this kind of information is of incalculable value to any person or body, such as The Valley Trust, interested in the improvement of food production.

The value of the Nuffield fellowships, which unfortunately were discontinued in 1960, has been out of all proportion to the sums involved. Besides producing three professional African anthropologists, the first in Southern Africa, the fellowships have rendered possible research which has been invaluable to the socio-medical project and has made a contribution to our knowledge and

understanding of Zulu social life.

Other anthropological projects undertaken have been a study of a group of Nyuswa diviners carried out in 1960 by J.W. van Niewenhuijsen, a graduate of the University of Amsterdam, who came on a student-exchange scholarship for a year to the University of Natal in 1960 (see van Niewenhuijsen, 1960; 1974, listed on p. 150); also The Nyuswa Social Ecology Project, begun in 1972 by C. Cross of the University of Michigan, U.S.A. under the supervision of Professor Argyle of the Department of African Studies, University of Natal. This project, still in progress, is directed at exploring the social processes involved in providing the local community with food, and especially the role played by the improvements advocated by The Valley Trust in regard to agricultural practices and nutrition education. Reference will be made in Chapter VIII to some of the preliminary observations.

Specific problems: nutrition research

M. Malie's preliminary report on Nyuswa crops and food habits has already been mentioned (p. 137 above). In 1957 E. White, dietician, Department of Nutrition, Pretoria, was invited by The Valley Trust to investigate the nutritional habits and problems of the people of the Valley (White, 1958). Much of the information on dietary habits amongst the Zulus, in Chapter III, derives from this study.

In 1961 R. Gilbey of the Psychology Department of the University of Natal made a psychological study of the effects of Kwashiorkor on children (Gilbey, 1961 listed

on p.151). Twenty children who had been treated a year previously for kwashiorkor at the Health Centre and were regarded as having recovered, were followed to their homes, where their play activities and social behaviour were observed and tested in familiar surroundings against a control group with no history of malnutrition. It was found that the malnourished group a year after their illness still showed the effects of kwashiorkor. They were inferior to the control group in level of development, in social behaviour, use of language, spontaneous play activity and clay modelling. Their apathy and passivity were marked.

In 1969, B.M.G. Shanley and O.A.M. Lewis published the results of amino acid analyses of the leaves of wild plants eaten by the Zulus of the Valley. The plants were collected and supplied by The Valley Trust. The study indicated that the content of the amino acids, cystine, methionine, lysine and tryptophan in these plants is sufficient to raise the protein score of maize protein from 65 to between 70 and 100 when included in the diet in equal proportion by fresh weight with maize (p. 151).

In 1973 L.A. Lawson, post-graduate student in the Department of Biological Sciences in the University of Natal carried out an experiment as part of her research for a higher degree. Her aim was to observe the effects of a high carbohydrate low-protein diet on the behaviour and growth of laboratory animals and design a demonstration for use in The Valley Trust nutrition education programme. She wrote up her results in a report, entitled Diet and

Behaviour, in partial fulfilment of a B.Sc. Honours degree, but the demonstration has not yet been attempted at The Valley Trust, because it is felt that until suitable staff is available it will be impracticable and liable to misunderstanding by the Africans.

Specific problems: experiments in agriculture

A long-term compost-fertilizer experiment (Lintner 1960, 1961, 1962, 1963, 1964, 1966), aimed at ascertaining whether it was possible to secure satisfactory yields without the use of expensive chemical fertilizers, was set up in 1960 at The Valley Trust. The results not only confirmed that it was possible to maintain a continuous supply of fresh vegetables and highly nutritious food for low income groups living under these conditions and that, furthermore, this could be achieved without the use of inorganic chemical fertilizers; it also provided clear evidence of the fundamental importance of restoring organic matter to these depleted, infertile soils.

Some of the results of the experiment are so highly significant to a medical service operating in areas that have an erratic rainfall, with long dry periods, that it has been thought desirable to indicate the nature of the experiment and comment on those aspects relevant to the socio-medical project[1]:-

The design was a 6 x 6 Latin Square. Six treatments were selected and each treatment repeated six times (Table 4).

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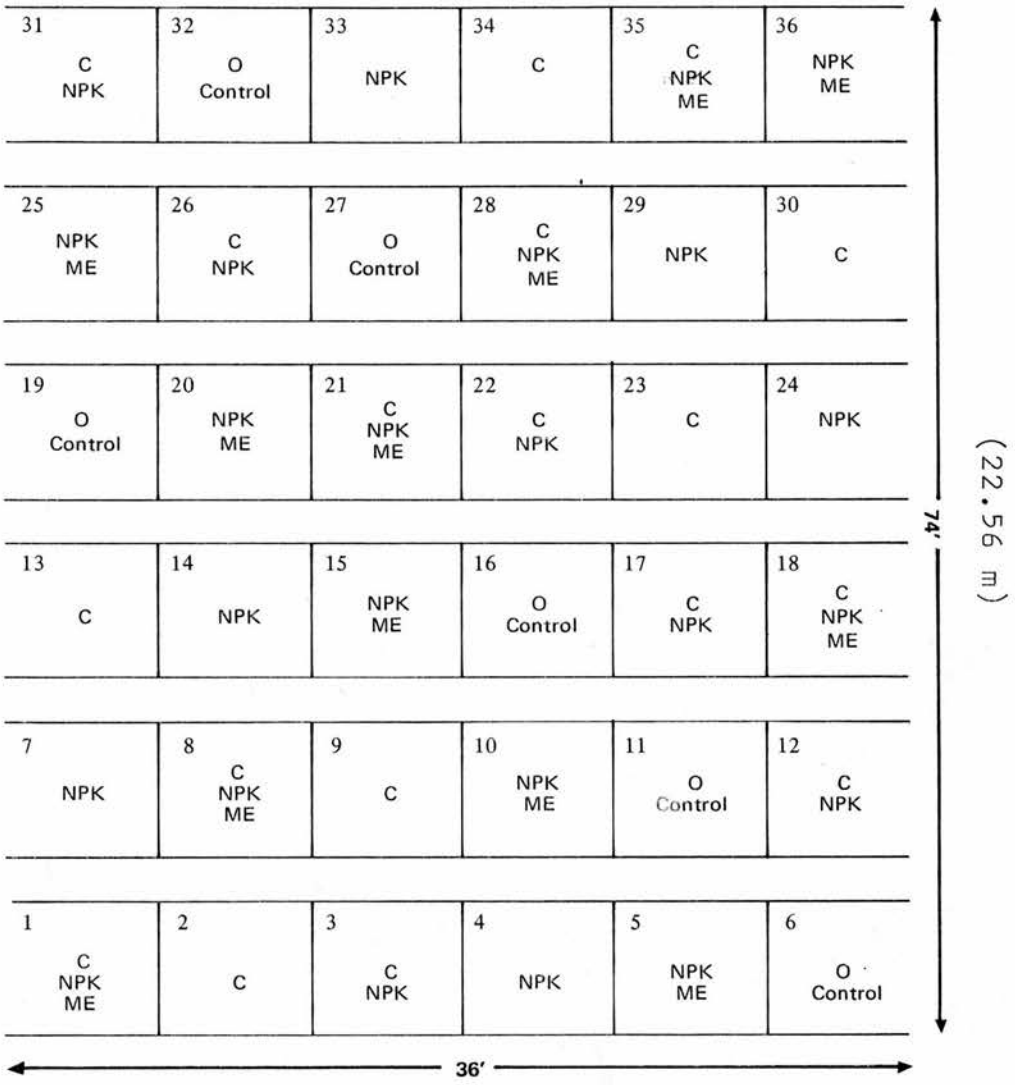
[1] The author intends to discuss the full significance of this experiment in a future publication.

Table 4 Compost-fertilizer Experiment

Latin Square

(36 Plots, each 6.667 sq. yds. (5,573 sq. m))



Treatment

1. O. = Control. Crop grown with no treatment other than well cultivated soil.
2. C. = Compost. Grass layered with soil to depth of 3 ft.
3. N.P.K. = Mineral nitrogen, phosphate and potash. Cultivated as in (1).
4. N.P.K. M.E. = As in (3) plus minor elements (M.E.) zinc, magnesium, copper, borax, molybdenum.
5. C. N.P.K.= Compost. As in (2) plus N.P.K.(3).
6. C. N.P.K. M.E. = Compost as in (2) plus N.P.K. M.E.(4)

Successive crops grown on the plots from February 1961 to July 1966 are shown in the following series of histograms A to I:

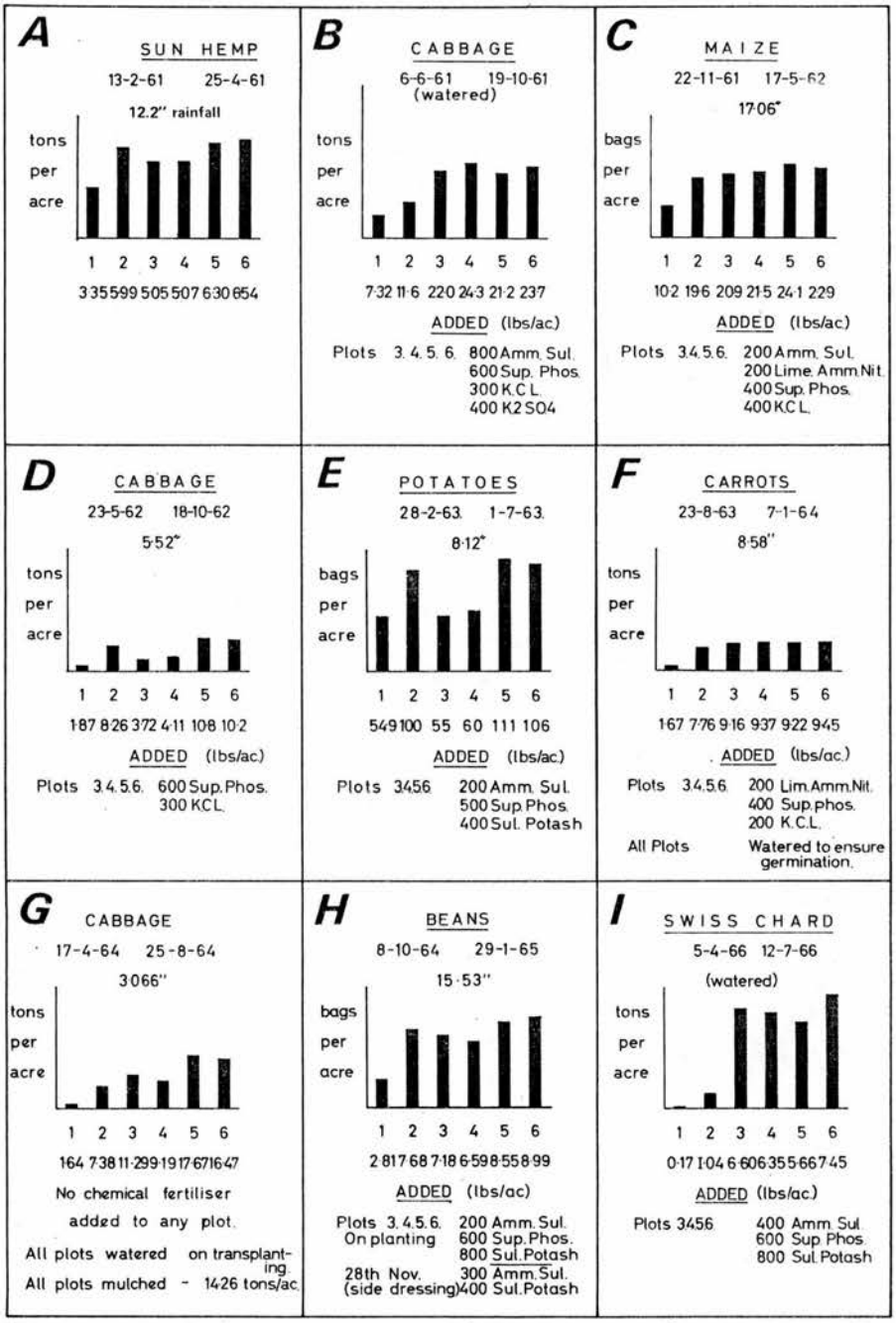


Photo-copy of original histograms (Imperial System)

1 inch = 25.4 mm: 1 ton = 907.02 kg:
1 acre = 0.405 ha.

Fig.20 Columns 1 to 6 represent the six treatments. Rainfall is shown on each histogram immediately below the date. Yields are calculated in terms of tons, or bags, per acre, according to convenience.

Of over-riding importance to The Valley Trust programme was, firstly, the improvement in yields in every instance in the compost plots (2) as compared with the controls (1) and, secondly, the demonstration of the relative ineffectualness of inorganic chemical fertilizer in the absence of moisture. The latter is clearly shown in the difference in yields of cabbages in the second histogram B which was heavily watered (10 gallons per plot per day), and the fourth histogram D which represents an un-watered crop except for the negligible 5.52" of rain which fell during the five month period of growth. In the latter histogram, columns 3 and 4 (N.P.K.M.E. respectively) show a negligible improvement in yield over the controls. This is in striking contrast to the corresponding columns, 3 and 4, in histogram B, where an abundant moisture rendered the inorganic chemicals available for plant growth. This feature is observable in all the histograms except B and I where the crops were watered regularly and H where the crop was grown during the rainy season.

For technical reasons, the experiment was discontinued as a scientific investigation in 1966 as movement of partitions between plots threatened to invalidate the results. However, it was decided to continue crops and record yields as a matter of interest only. These are shown in the following histograms J to O (Fig. 21).

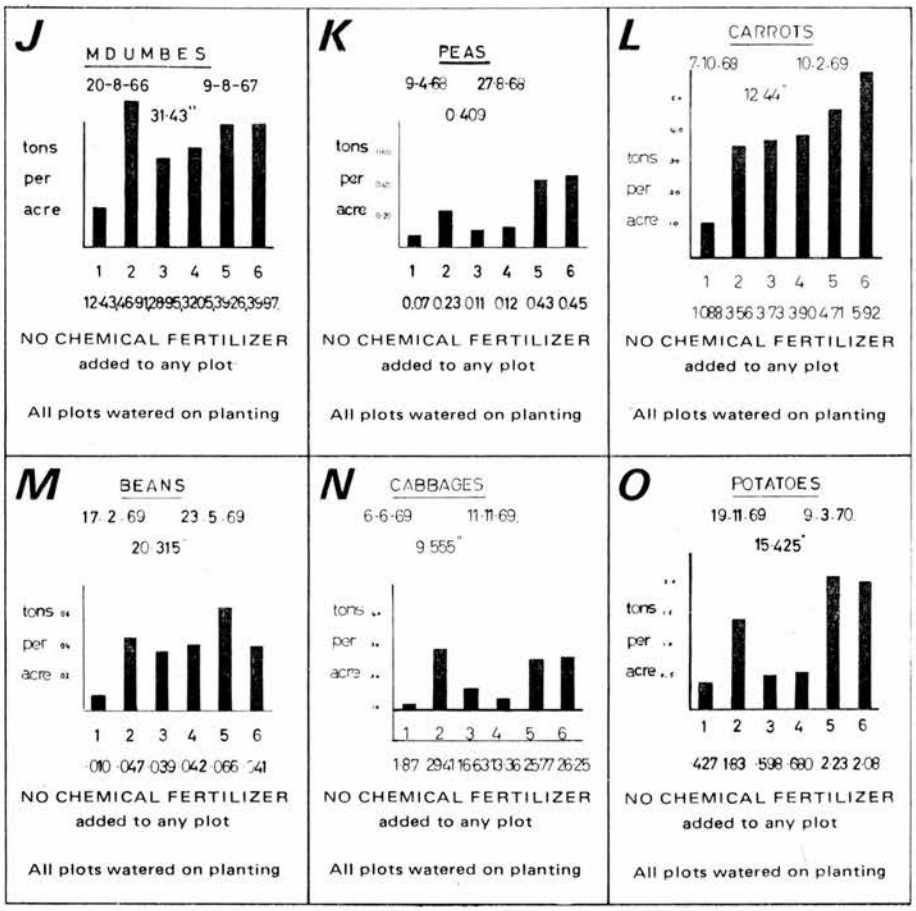


Fig. 21

Similar patterns to those in histograms A to I persist in the above with no evidence to suggest a decline in the fertility of the composted plots in spite of no additional organic matter having been added to the composted plots following their initial construction in 1961.

NOTE: This Long-term Compost-fertilizer Experiment was made the subject of a special report by the Oxford Committee for Famine Relief. (McGrath, 1964).

During a visit to The Valley Trust in 1971, Dr. R. Stead, Senior Lecturer in the Department of Biochemistry, University of Cape Town and a member of The Valley Trust, was greatly impressed by the importance of the long-term compost-fertilizer experiment, which had been carried out by J.L. Lintner. He discussed the possibilities with Dr. Nigel Stott of launching a food-resources evalutation study, with the object of relating land resources to human nutritional requirements and providing estimates of human land needs. Trenching and, or, traditional gardening techniques would be used and allowances made for imponderable factors human and other, including drought, winds and other vagaries of the weather, in a Food Resources Evaluation Project. Advice on methodology was obtained from the Departments of Biometry and of Crop Science of the University of Natal's Faculty of Agriculture, and from the Regional Biometrician of the Department of Agricultural Technological Services, Pietermaritzburg. This is a long-term project which entails the collection of data in respect of yields from Valley Trust demonstration gardens (The Valley Trust Annual Report, 1972, p. 14 and 1973, p.8).

Specific problems: health

In 1958, as has already been mentioned, the author made a survey of the health and living conditions of a group of families in the Valley for the WHO. In 1972/3 this was followed up for purposes of evaluation, as indicated in the next section below.

Evaluation studies

In 1961, at the request of The Valley Trust, the Department of African Studies, University of Natal, made a study of the response of the people of the Valley to the gardening and fish-dam projects and the nutrition education programme of The Valley Trust, using a questionnaire technique administered by students of the Department, (Krige, E.J. 1962). This will be referred to in Chapter VIII.

In 1972/3, aspects of the Family Health Survey contained in Section 2 of the WHO Report, were repeated in 105 of the original 155 households studied in 1958. The results of this replication, with particular regard to changes in nutritional practices, are also discussed in Chapter VIII.

Investigations are at present being carried out by the author to ascertain the position with regard to tuberculosis in the Valley. Preliminary findings are that there has been a decided decline in the number of cases attending the Health Centre over the past twelve years and particularly amongst patients from areas in close proximity to the Health Centre and Valley Trust. Until further investigations have been completed, however, it will not be possible to comment on the significance of these findings.

Research and experimentation are vital to a socio-medical project in a developing community. In the projects under discussion the close connection with a nearby university has been invaluable. On the other hand, The

Valley Trust socio-medical project, for its part, has also been of interest and benefit to the university departments involved and to their students.

The Valley Trust offers considerable scope for further research in a variety of fields which could be of great value. For example, investigations into the possible spread of bilharzia by the fish and water conservation dams and the effect of this on the health of the people; and whether bilharzia is not a far lesser danger to health than malnutrition due to the under-production of protective foods which accompanies the lack of water conservation measures.

An avenue of research which could have wide implications beyond the field of nutrition, would be a study of soils of varying character and the quality of foods grown on them. The Valley Trust is in a unique position to co-operate in such research, with its rehabilitated soils to which have been added, for over two decades, grass and other organic matter containing a large variety of inorganic elements.

Publications and unpublished Reports arising from The Valley Trust Research Projects

(in chronological order under various headings)

Studies in social anthropology and social ecology

Vilakazi, A.	1959	A Reserve from Within. African Studies, vol 16, pp. 93-101.
	1960	Zulu Social Structure and its Dynamics Today. Dissertation presented to the University of Natal for the degree of Doctor of Philosophy.
	1962	Zulu Transformations. A study of the dynamics of social change. University of Natal Press, Pietermaritzburg.
Mbatha, M.B.	1960	Migrant Labour and its Effects on Tribal and Family Life among the Nyuswa of Botha's Hill. Dissertation submitted to the University of Natal for the degree of Master of Arts.
van Nieuwenhuijsen, J.W.	1960	The Witchdoctor Institution in a Zulu tribe. The Valley Trust*. Annual Report, 1960, pp. 16-25.
	1974	Diviners and the Ancestor Spirits. University of Amsterdam Press.

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*The Chairman's Annual Report, together with original articles, reports, photographic illustrations, explanatory notes and other relevant material, is published yearly in booklet form under the title "The Valley Trust". Distribution is to members, supporters, interested members of the public and various institutions and organizations, both in Southern Africa and abroad. Recipients in the United Kingdom include the libraries of the British Museum, London, W.C.1., The University of Manchester, The Department of Education, University of Stirling and The Institute of Education, University of London.

Copies of these booklets, or photo-copies of sections required, are available from The Administrative Officer, The Valley Trust, P.O. Box 33, Botha's Hill, 3660 South Africa.

Studies in social anthropology and social ecology (continued)

Sibisi, H. 1972 Health and Disease among the Nyuswa Zulu (an ethnographic account). Dissertation submitted for the degree of Doctor of Philosphy, University of Cambridge, 1972.

(in the press) Zulu Cosmology. Academic Press, London and New York.

Preston-Whyte, E. and Sibisi, H. 1975 Ethnographic Oddity or Ecological Sense?. Nyuswa Zulu descent groups and land allocation. African Studies, vol. 34, pp. 284-316.

Food and nutrition studies

Malie, M. 1957 Preliminary Report on Nyuswa Crops and Diet. Prepared under the direction of Professor E.J. Krige, Head of the Department of African Studies, University of Natal. (Unpublished).

White, E. 1958 Report on Investigations into the Nutritional Habits and Problems of the Zulus in the Valley of a Thousand Hills. The Valley Trust. Annual Report, 1958, pp. 22-38.

Gilbey, R. 1961 A Psychological Study of the Effects of Kwashiorkor on Children in the Valley of a Thousand Hills. The Valley Trust. Annual Report, 1961, pp. 16-19.

Lawson, L.A. 1973 Diet and Behaviour. (Laboratory animal feeding experiments). Research Report submitted for degree of Bachelor of Science, Honours, in the Department of Biological Science, University of Natal. (Unpublished).

Shanley, B.M.G. and Lewis, O.A.M. 1969 The Protein Nutritional Value of Wild Plants used as Dietary Supplements in Natal (South Africa). Plant Foods for Human Nutrition. Vol. 1, No. 4, pp. 253-258.

Soil and agricultural experimentation

Lintner, J. 1960 A Preliminary Soil Study. The Valley Trust. Annual Report, 1960, pp.26-30.

1961 A Preliminary Soil Study. The Valley Trust. Annual Report, 1961, pp. 20-25.

Soil and agricultural experimentation (continued)

Lintner, J. 1962 A Preliminary Soil Study. The Valley Trust. Annual Report, 1962, p.24.

1963 Long-term Trenching-Fertilizer Experiment at The Valley Trust. The Valley Trust. Annual Report, 1963, pp. 23-25.

1964 Long-term Trenching-Fertilizer Experiment at The Valley Trust. The Valley Trust. Annual Report, 1964, pp. 26-28.

1966 Long-term Trenching-Fertilizer Experiment at The Valley Trust. The Valley Trust. Annual Report, 1966, pp. 24-25.

McGrath, M. 1964 Summary of a Report on The Valley Trust system of Growing Vegetables. The Valley Trust. Annual Report, 1964, pp. 19-25.

Family Health Survey

Stott, H.H. 1959 A Pilot Health Study of the Zulu Community, Botha's Hill, Natal, South Africa. World Health Organization. Geneva. WHO/PHA 33.

Evaluation studies

Krige, E.J. 1962 Some Aspects of the Impact of The Valley Trust on the Nyuswa and Qadi of the Valley of a Thousand Hills. The Valley Trust. Annual Report, 1962, pp. 15-21.

Mack, K. and Stopforth, P. Socio-cultural Background and Household Nutrition among Africans in the vicinity of The Valley Trust, Natal. The 1972 Evaluation Study. (Publication pending).

CHAPTER VIII

EVALUATION AND DISCUSSION

Response of the community

In this attempt to assess the effects upon health and nutrition of the socio-medical experiment and the response to it of the community, reliance has been placed upon research projects discussed in Chapter VII, on Health Centre records, on Annual Reports of The Valley Trust and on a questionnaire on kwashiorkor submitted for purposes of comparison to various medical mission hospitals in Reserves in Natal and elsewhere.

An early encouraging response to the project was the request of the community for sub-centres of the Botha's Hill Health Centre and the voluntary provision by it of sites and accommodation for them. These were established between 1953 and 1970. All are situated at strategic points radiating from the Health Centre at distances ranging from 5 to 12 miles (8 - 19 km) by road. With these sub-centres the scope of nutrition education was considerably extended and its impact was further increased by the expansion into these areas of the complementary vegetable gardening and other activities of The Valley Trust. A result of this extension of services and of a policy by which patients are motivated individually towards change, as distinct from group motivation, has been a wide and irregular distribution of gardens, singly or in clusters, throughout the whole Valley (with correspondingly wide dissemination of new ideas) instead of a concentration

in one or two areas around the Health Centre.

Significant developments denoting interest and willingness to participate in the activities of the project marked the decade 1951 - 1961. By 1962 individual case records at the Health Centre had exceeded 75 000 with total attendances well in advance of 300 000. The Valley Trust agricultural demonstrator was receiving more calls for assistance than he could meet and there was a far greater demand for Valley Trust vegetable seedlings and protective fencing.

As a result of increasing demand for fruit and fresh vegetables, and in emulation of The Valley Trust Home Produce Market, 12 fresh produce stall-holders and 20 fresh produce hawkers had sprung into existence in the Valley, while trading stores had also begun to sell fresh produce (Stott, 1962). A healthful development was the selling of surplus home-grown produce by new gardeners direct to neighbours - a practice which has continued to spread throughout the community.

Records of maize ground in The Valley Trust mill in the May, June, July milling period rose from 5 100 kgs in 1959 to 14 718 kgs in 1962 and there was also a "phenomenal increase in the cultivation of beans throughout the area...."coinciding with the intensive propaganda of the Health Centre and The Valley Trust for a greater use of this protein food" (Stott, 1962).

From the outset it became evident at the clinics that significantly greater co-operation and response to nutrition education could be expected from the Christian

and the transitional sectors of the community than from traditionalists. Attendances by traditionalists were no fewer than those of the others, but the traditionalists were clearly not as receptive to ideas which linked dietary habits and ill-health. Their attention appeared to be focused on assessing the ability of the doctor and his medicines to "drive out with speed" the "evil factor" responsible for their disorders. Moreover, an "instant" diagnosis was expected with minimal history-taking, questioning and discussion, all of which the unenlightened regarded as indications of uncertainty and lack of perception on the part of the doctor or nurse. Their deeply-rooted mystical conceptions of the causation of ill-health called for considerable understanding and circumspection from all staff members who were carefully briefed into accepting the situation and avoiding any criticism, directly or by implication, of indigenous medicine men and women. These latter are closely associated with the perpetuation of many of the inhibiting beliefs and attitudes which are so deeply entrenched in the social life of the people generally.

Co-operation of indigenous medical personnel

Our policy of non-interference in regard to diviners and herbalists had been considered as likely to be productive of the greatest good in the long term. Indeed, by 1968 it was reported (Stott, 1968) that diviners, formerly opposed to the medical service, had for over 10 years not only been openly attending Health Centre clinics

for treatment for themselves and families, but had brought or sent patients. Furthermore, three of the most productive, recently established vegetable gardens were owned by leading izangoma[1] (diviners) and an inyanga (medicine man). All three of these had been established under Valley Trust supervision.

One isangoma, who had attended the Health Centre for several years and who had interested herself in Valley Trust activities, introduced vegetable gardening as part of the training for her pupils, with stress on the "strength-giving" role of fresh produce. In the 1973 Annual Report of The Valley Trust (pp. 12-15) is recorded, with photographic illustrations, a nutrition demonstration by The Valley Trust Nutrition Education team at her kraal in the depths of the Valley. This is an isangoma training establishment to which trainees are drawn from throughout the Republic. It is significant that participation by members of the community had been encouraged by this isangoma, who is regarded as the most influential in the area.

The lead given to the community by this and other izangoma towards improved nutrition habits and the cultivation of vegetables and fruit, has probably contributed very materially towards bringing about the greater response from the traditional section that has been reported in recent years, both in vegetable gardening and dietary habits.

The response of inyangas to the vegetable gardening and nutrition education programme is difficult

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[1] Plural

to assess for reasons of identification, as few in the Valley regularly wear distinctive attire. Nevertheless, one of the finest all-the-year-round and highly productive, Valley Trust-assisted, vegetable gardens in the depths of the Valley, is owned and worked by an influential inyanga. This garden, over an acre (over 0,4 ha) in extent and sited mainly on a sloping hillside, has stood out in dramatic contrast to the neglected, bare, infertile surrounding areas for well over ten years[1].

Evidence of early change in agricultural practices

A sample of families that had made gardens in the Nyuswa and Qadi areas was investigated during December, 1961 and January-February, 1962 by students of the University of Natal under the direction of Professor E.J. Krige, Professor of Social Anthropology and Head of the Department of African Studies (Krige, 1962). This investigation, supplemented by and viewed against the background of long-term research carried out in the Valley by Professor A. Vilakazi (1962) and Mr. M.B. Mbatha (1960) brought to light the following interesting facts and information on the impact of The Valley Trust on the people of the area:

- the response of the gardening campaign had been good considering the absence at labour centres of 71% of the able-bodied men between the ages of 15 and 60;
- the number of gardens in the Nyuswa-Qadi area by 1961 had reached 87 and at the time of the investigation stood at 94;

continued

[1] Annual Report of The Valley Trust 1969, pp. 14-15 (illustrated).

- 43% of all gardens in the sample had been begun in the two-year period 1960-1962;
- 70% of all gardens in the sample at the end of 1961 had been the direct result of encouragement given and ideas imparted by The Valley Trust;
- all families with gardens consumed the vegetables themselves with 54% of them selling vegetables as well;
- 90% of the gardens had young fruit trees growing, all of which had been obtained from The Valley Trust - peach, avocado, apple, mango, guava, mulberry, pine-apple and banana;
- all except two of the families in the sample ate fish in some form (tinned, dried or fresh).

Professor Krige stated that it was clear from the investigation that The Valley Trust had "in spite of severe limitations in resources and personnel, met with a considerable degree of success in its campaign to educate people in better food habits...." Professor Krige concluded with the following comment: "In these conditions where the land is inadequate for subsistence farming and people depend largely on wages for their food, intensive gardening assumes tremendous importance for nutrition and health. The response to the gardening and health programmes of The Valley Trust is an encouraging sign in an otherwise gloomy picture of increasing population pressure on limited resources in land."

No further studies of this order were carried out during the succeeding years from 1962 to 1972, but the following observations indicate a continuing growth of community response to the overall socio-medical programme (Stott, 1972):

- a noticeable decline in the number of cases of pellagra, marasmus and kwashiorkor with oedema, attending the Health Centre;
- an accelerating demand by the community for fresh vegetables and fruit at trading stores;
- an increase in the number of vegetable gardens in the two immediate tribal areas of Nyuswa and Emaqadini from 94 to 343;
- the appearance of 23 roadside stalls linked with domestic vegetable gardens;
- the appearance of 86 domestic ponds (small dams), 30% of which were stocked with Tilapia;
- increasing use of The Valley Trust Mill (it may be added here that 151 families brought maize seed for grinding during the first seven months of 1975 as against 87 for the same period in 1974);
- unabating demand for vegetable seeds and vegetable seedlings;
- a continued increase in the production of beans along with markedly accelerated sales of this valuable protein food from trading stores.

Evidence of change in nutritional habits

In May, 1972 a research project was launched in the Nyuswa tribal area to assist The Valley Trust in assessing the effects of its activities on the ecology of this relatively remote area. Preliminary reports* reveal that despite a background of serious problems relative to high population density and migrant labour (which leaves the majority of wives at a considerable disadvantage, as they have neither the labour nor the decision-making authority of their husbands) "people in the study area have now developed a strong liking for fresh fruit and vegetables - these are either grown or purchased at stores, or from neighbours who cultivate them".

Comments are also made on the greatly improved feeding practices which are attributed to "the spread of enlightened nutritional practices in line with Valley Trust teachings".

As mentioned earlier (p. 9) during 1972/3 Section 2 of the WHO Report, the Family Health Survey, was replicated by The Valley Trust. The data was submitted for analysis to the Institute for Social Research, University of Natal. A draft report has been received (Stopforth and Mack 1975) which, for the purposes of this thesis, will be referred to as the WHO Follow Up. Whilst the findings of the WHO Follow Up only refer to a defined population of a limited number of households (105), in

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* Cross, C.R., B.A., M.A. (1973) "Nyuswa Social Ecology Project". Department of African Studies, University of Natal.

the Valley, and should not be generalised to the wider African community, certain beneficial changes in household food consumption patterns have emerged. These changes based on frequency of consumption within households approximate very closely the teachings of the Health Centre and Valley Trust over the past twenty-five years.

Amongst food items consumed on significantly more occasions during 1972/3 compared with 1958 are:

- legumes as dried beans (as distinct from tinned beans used in urban areas);
- fresh fruit, mainly oranges, apples, bananas, guavas and peaches;
- cow's milk, mainly powdered milk (percentage distribution of frequency of milk-type used in households recorded during research visits was fresh milk 28.2%, powdered milk 50.6%, amasi 16.0%, sterilized milk 3.9%. tinned cream 0.4%);
- unsaturated fats;
- fresh vegetables, the most popular being cabbage, spinach, tomato (used as a vegetable as distinct from use as a relish), onion, wild greens, pumpkin, pumpkin tops and carrots.

Amongst food items consumed on significantly fewer occasions during 1972/3 compared with 1958 are:

- sweetened condensed milk which was recorded as having "changed drastically in the intervening period";

- meat, with a drop from 34% in 1958 to 8% in 1972/3 in households consuming meat on 5 to 6 "recall" occasions;
- mealies, mainly the refined products, samp, mealie rice and sifted mealie meal, and saturated fats, principally dripping.

The use of sweetened condensed milk was strongly discouraged from the time of opening the Health Centre due to the excessively high refined carbohydrate diet of the people, in all age groups, and furthermore because of the desire engendered in infants at weaning for sweetened foods such as sugar-water, heavily sugared porridge and tea etc. - leading to the neglect of nutritious and health-giving foods.

The encouragement given to the use of legumes, vegetable proteins and poultry in place of meat was discussed earlier, and also discouragement in the excessive use of refined maize products and saturated fats. The latter (dripping and suet) were formerly used to a considerable extent in the universal habit of frying most foods - a habit vigorously discouraged in the nutrition education programme, particularly in relation to young children and infants. The appearance of eggs in the category of diminishing use is probably due to their omission from the nutrition education programme because of traditional taboos and the widely held opinion that they are more profitably used as poultry. The consumption of eggs may, however, increase in due course, as it has in similar areas nearer urban influences, as the result of recent sales-promotion techniques of the egg industry.

From the WHO Follow Up has also emerged evidence of beneficial change with regard to infant feeding in the sample households. Firstly, breast-feeding is discontinued much later in the 1972/3 sample, as compared with the 1958 sample, (Table 5) and secondly, in the 1972/3 sample, greater use is made of fresh produce for infant feeding.

Table 5 Comparative ages at which breast-feeding is discontinued

Age of Infant		Breast-feeding discontinued			
		1958 *		1972/3	
		N	%	N	%
Weeks	0	26	51,0	6	5,2
	1	1	2,0	1	0,9
	2			1	0,9
	3				
Months	1	3	5,9	2	1,7
	2	1	2,0	2	1,7
	3	3	5,9	4	3,5
	4				
	5			1	0,9
	6	1	2,0	6	5,2
	7				
	8	1	2,0	1	0,9
	9			17	14,7
	10	1	2,0	2	1,7
	11			1	0,9
	12	2	3,9	12	10,3
	13	1	2,0	4	3,5
	14	1	2,0	7	6,0
	15	2	3,9	7	6,0
	16	5	9,8	4	3,5
	17			2	1,7
	18	1	2,0	16	13,7
	19	1	2,0	2	1,7
	20			5	4,3
	21			1	0,9
	22	1	2,0		
	23				
	24			8	6,9
Not known				4	3,5
Total		51		116	

* Appendix A. Family Health Survey 17.1, p. 222.
Also W.H.O. Follow Up (Stopforth and Mack, 1975).

These changes could be significant in the light of a marked reduction in kwashiorkor in the Valley over the past ten years.

An attempt was made during the 1972/3 survey to evaluate perceptions among respondents relative to the association between feeding habits in health in children - a concept very foreign to traditional African thinking as explained earlier. In a recent study conducted by Schlemmer and Stopforth of the Institute for Social Research, Durban, it was revealed that only 8 out of 75 women (11%) from a random sample in Umlazi (alt. Umbumbulu), a peri-urban township of Durban (Fig.23, p.170), showed an understanding of the relationship between food and health in child nutrition. Their response was made to the question "How can the food one eats affect a person's health, for better or worse, among children?".

In the 1972/3 survey a parallel question was posed to 139 respondents in the Valley: the questions and the itemised replies are contained in Table 6, p. 165.

The response indicates not only a strong appreciation of the association between food and health but an interest in a diversity of good foods which correlates with findings already reported in general food consumption patterns, i.e., the use of vegetables, legumes and fruit.

Table 6

Itemised response to the question of relationship between nutrition and health with regard to children: "What foods do you think are specially good for building strong healthy children, whether you have these foods or not, whether you give these foods or not?"

Food Categories

Mealies

	n
Mealie meal	35
Puthu	33
Boiled whole mealies	31
Porridge	18
Mealie rice	12
Mealie bread	4
Food made from mealies	3
Green mealies	2
Mealie bread with beans	2
Food made from mealie meal	1
Ground mealie products	1
Unsifted mealie meal	1
Boiled ground mealies	1
Amaheu	1
Sour porridge	1
	156
Plus:	
Samp	50
Samp and beans	11
Samp water	1
	218

Vegetables

	n
Imifino	38
Pumpkin	27
Cabbage	26
Potatoes	22
Sweet potatoes	17
Amadumbe	14
Spinach	5
Wild imifino	4
Tomatoes	4
Carrots	3
Isijingi	3
Green beans	1
Avocado	1
Peas	1
Other vegetables	26
	192

Beans

	n
Beans	77
(Samp) and beans	11
Mealie bread with beans	2
Soup beans	1
	91

Milk

	n
Amasi	44
Milk	40
Breast milk	1
	85

Animal Protein

	n
Meat	49
Eggs	18
Fish	7
Butter	3
Fat	3
Cheese	2
	82

Fruit

	n
Variety	18

Multiple Response n = 139

W.H.O. Follow Up. (Stopforth and Mack, 1975).

Evidence of improved health standards

That there has been an increase in the production and consumption of protective foods in the area is beyond doubt, but detailed clinical studies would be required before it is possible to assess the extent to which nutritional standards have been raised, and to evaluate the effect of this greater consumption of protective foods on the health of the people of the Valley. Nevertheless, the following studies, when viewed against the background of development that has taken place in the Valley since the launching of the overall socio-medical experiment, would appear to lend strong support to the view that nutritional standards have been raised and with beneficial effect on at least the children of the area.

In December 1961, a brief investigation was made from Health Centre records with a view to comparing the incidence of malnutrition amongst patients attending the Health Centre from areas immediately adjacent to the Health Centre and those further afield. From these records it was found that the percentage of patients suffering from malnutrition was 9-10% of all patients from the adjacent Nyuswa and Qadi, among whom the Health Centre and Valley Trust commenced their nutrition education activities, and rose to as high as 33⅓% and 50% in the peripheral areas of Fredville and Hammarsdale, areas that had more recently come under the influence of the Health Centre and The Valley Trust. (Krige, J.D., 1961).

Recently a study was made of the attendances of cases of kwashiorkor between the years 1963 and 1975 at the Botha's Hill Health Centre. In view of frequent assertions by doctors and nurses that there has been a steady decrease in the number of cases of malnutrition attending the Health Centre clinics, it was decided to examine the Health Centre records with regard to the attendances of cases of kwashiorkor with oedema. This form of malnutrition had been declared a notifiable disease in September 1962 and as a result special records had been kept. These were maintained in spite of the withdrawal in 1966 of the necessity for notification.

From the outset, in 1962, it had been decided at the Health Centre that in order to avoid inconsistencies in diagnosis, only cases showing oedema would be notified; thus pre-oedematous cases featuring skin lesions, retardation of growth, hair changes, peevishness and recurrent diarrhoea etc. are not included. The impressions of the medical staff appeared to be confirmed by the results of this investigation (Fig. 22, p. 168).

The following possible factors that could have produced or contributed towards such a result have been considered:

(i) diagnostic criteria - this should have been reliable with the presence of oedema an essential feature:

(Continued p.169)

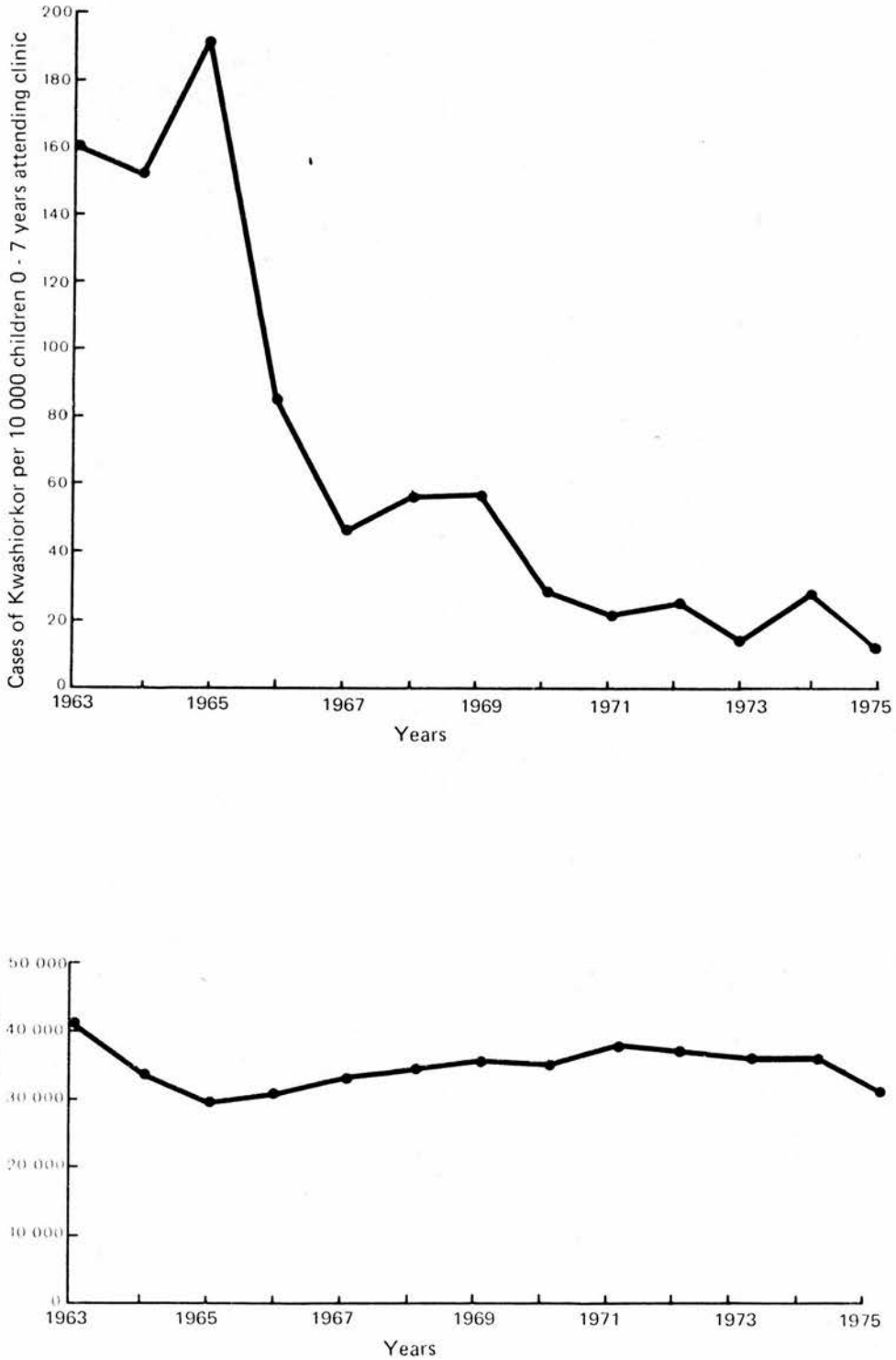

Fig. 22 Upper graph:
Cases of kwashiorkor (with oedema) per 10 000 children 0-7 years of age seen at Botha's Hill Health Centre 1963-1975

Lower graph:
Total attendances, by all ages, at the Botha's Hill Health Centre 1963-1975.

(ii) inaccuracy in recording procedure - this aspect of administration has been examined with considerable care and appears to be entirely satisfactory, particularly with regard to kwashiorkor with its special records and, furthermore, there has been no change in the recording staff during the past 16 years:

(iii) cases being taken elsewhere - the nearest available medical practitioners (Drs. P.H. Williams and J. Fielding) supplying an alternative medical service, accessible to the people of the Valley, confirm the opinion of the Health Centre medical staff that there has been a marked drop in the incidence of kwashiorkor (with oedema) in the area, with only two cases seen between them during 1974:

(iv) ageing population with a low birth rate - investigation of attendances of children in the 0-3 year and 4-7 year age groups over the 1963-1973 period shows no significant change:

(v) cases being admitted direct to King Edward VIII Hospital, Durban - a possibility not only discounted for reasons of distance, expense and difficulty of admission, but from result of investigations which reveal that the continuing substantial admissions to this hospital of severe cases of kwashiorkor (with oedema) and marasmus, derive from the Durban peri-urban areas of, in order of frequency, Umbumbulu, Ndwedwe (referred to earlier) and Pinetown, (Fig. 23, p. 170).

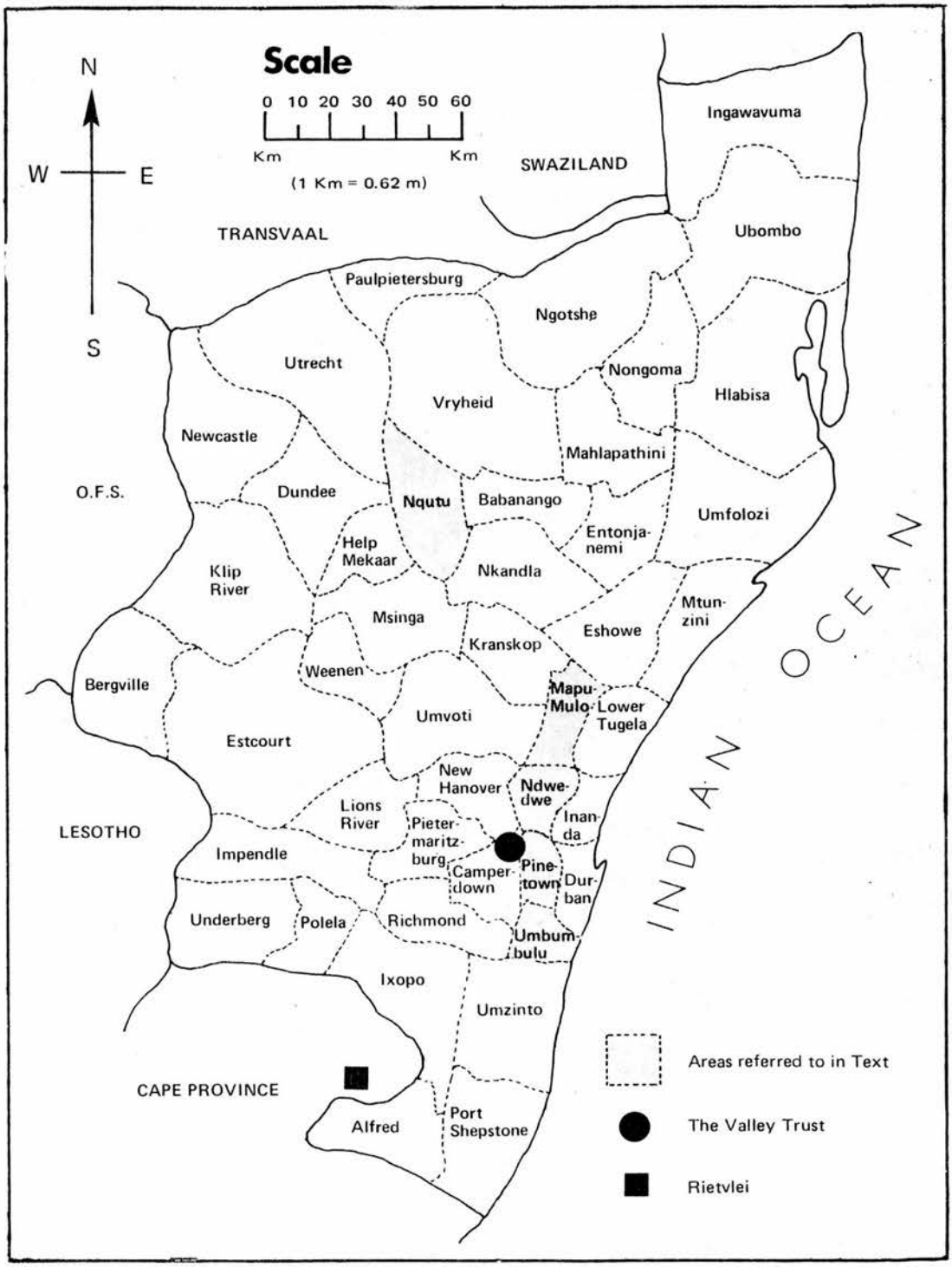

Fig. 23 Sketch map of Magisterial Districts in Natal and Zululand.

In order to ascertain the position with regard to kwashiorkor (with oedema) in other areas in Natal and further afield, the following questions were submitted to eleven well-established Medical Mission hospitals in 1975:

- "how many new cases of kwashiorkor (with oedema) attended your out patient clinics each year from 1963?
- how many new cases of kwashiorkor (with oedema) were admitted to your wards each year from 1963?
- do you consider there has been any definite change; for better or worse, in the incidence of kwashiorkor (with oedema) in your area?
- have you any other information or comments about the trends of kwashiorkor (with oedema) in your area since 1963?"

Of the seven replies received, six clearly indicated no significant improvement in their respective areas. The seventh, a part-time Mission hospital doctor in Northern Zululand was non-committal, claiming that his records were inadequate. From the Charles Johnson Memorial Hospital in the rural area of Nqutu in Northern Natal, (Fig.23) came the comment, "our general impression is that the amount of kwashiorkor in our area is steadily increasing over the years". Admissions to children's wards (0-5 years) were:

1st April-31st March	1972/3:	1 910 + 255	kwashiorkor with oedema
" "	1973/4:	1 783 + 299	" "
" "	1974/5:	2 176 + 284	" "

From the Rietvlei Mission Hospital situated in a rural area in the Cape Province and adjacent to the southern boundary of Natal, came the comment that kwashiorkor was "still very rife" in the area but no records were kept. At St. Lucy's Hospital further south, at Tsolo in the Transkei 220 miles (352 km) from The Valley Trust, admissions for kwashiorkor (with oedema) from 1966 to 1974 were as follows:

1966	134	1971	230
1967	166	1972	236
1968	212	1973	209
1969	269	1974	243
1970	217		

From the same hospital it was reported in 1970 by the medical superintendent that "there had been a threefold increase in the number of kwashiorkor cases over the past eighteen months. Only the dying and the critically ill could be admitted to the hospital". (Horrell, M., 1970).

Adverse reports were also received from the Umpumulo Lutheran Hospital serving the large rural Mapumulo African Reserve, some 40 miles (64 km) north-east of the Valley of a Thousand Hills, (Fig. 23) also from the Oakford Priory Hospital in the district of Inanda some 20 miles (32 km) to the north-east of the Valley. This latter hospital draws patients from the vast Ndwedwe African Reserve, lying immediately north of and adjacent to the area of operation of The Valley Trust.

The medical superintendent reported that the position with regard to kwashiorkor in parts of the Ndwedwe area was "very bad", but was unable to supply statistical data. Ndwedwe is completely separated from the services of The Valley Trust and Health Centre by the large unbridged Umgeni River. There the standard of living, transport services and accessibility of Durban are regarded by Africans as better than the equivalents in the Valley of a Thousand Hills.

From Dr. M.E. Cameron of the Church of Scotland Hospital, Tugela Ferry, which is situated in a rural area approximately 100 miles (175 km) north-west of Botha's Hill, further disquieting information on the kwashiorkor situation was contained in a letter to the author dated 28th May 1976:

> "Here are the figures for our admissions for kwashiorkor during the past year, 1st April '75 to 1st April '76. Unfortunately I cannot give you any previous statistics as it appears no record was made. The figures include only children with the full-blown picture of kwashiorkor, with oedema, skin and hair changes etc. A very high percentage of admissions are clinically undernourished but I have not included them, their reason for admission being something else.
> Total number of admissions (for all conditions) was 996. Of these, 181 were for kwashiorkor; this was the greatest single cause for admission. 20 were less than 1 year, 149 were between 1 and 3 years and 12 were 4 years.
> 35 of these died, all but 2 in the first 3 days."

The question may arise as to what extent the urban influence and improved economic standards may have contributed towards bringing about the beneficial change in dietary habits now apparent in the Valley.

Whilst improved economic standards may have increased purchasing power, it cannot, of course, be assumed that the introduction of more cash into the Valley has been responsible for the discrimination in food purchases that is now evident, a discrimination that is significantly in line with Valley Trust teachings and without parallel elsewhere, as far as can be ascertained.

Two further points are apparent; firstly, in the Republic, dietary patterns of urbanised Africans are characterised by an increasing consumption of meat, refined carbohydrates (e.g., refined maize products, commercial sugar, sweetened condensed milk), saturated fats along with a low intake of fresh vegetables and fruit (Manning, E.B., Mann, J.I., Sophangisa, E., Truswell, A.S., 1971).

To this should be added the comment from the foregoing reference that "the transition from rural to urban life is accompanied by considerable reduction in dietary crude fibre due to increased consumption of refined carbohydrate foods"; this is in direct contrast to the beneficial dietary patterns which appear to be developing in the Valley and which are supported by the collective evidence presented in this and previous chapters, also by the WHO Follow Up. In the latter, it should be recalled, meat, refined maize products, saturated fats and sweetened condensed milk were consumed

on significantly fewer occasions in the households studied.

The second point that arises is that far from there being benefit in the dietary changes which have resulted from urban influences in the Valley, the contrary was shown to be the case. This was reported by White (1958) and discussed in Chapter III. It has in fact, been the deleterious effects on the dietary and living habits of the people of the Valley of urban influences that The Valley Trust has been attempting to counter for the past twenty-five years.

Conclusion

It is difficult to obtain a scientifically satisfactory assessment of the general improvement in the health of a large scattered community and furthermore, this is a continuing long-term experiment and as such is necessarily incomplete.

There are indications strongly suggestive of an improvement in health standards as evidenced by the dramatic reduction in cases of malnutrition in the Valley, especially kwashiorkor, but it would be premature at the present stage, in the absence of further appropriate studies, to attempt to extend this claim to the community as a whole. However, the results obtained thus far would appear to support the view that the strategy of The Valley Trust has made a beneficial impact on the attitudes and nutritional habits of the people.

The basic underlying principles of development which may be considered as having played an essential

role in effecting beneficial change in the Valley are summarized as follows:

- the adoption of a broad socio-medical approach to the problem of malnutrition and ill-health with recognition of existing conceptions of disease, habits, traditions and customs, particularly nutritional customs, also the total environment - social, cultural, economic and physical,
- the encouragement of people to relate biologically to their environment with particular emphasis on the conservation of soil, water and vegetation, etc.,
- the demonstration of local environmental potential for food production without the introduction of costly external agencies such as inorganic chemical fertilizers,
- the avoidance of short-term measures of expediency likely to stultify initiative and a realistic approach to problems,
- the encouragement of a greater appreciation of the importance of the biological unit, the family, as being fundamental to stability of the community as well as the individual,
- the designing of projects so as to gain the understanding, co-operation and active participation of the people thereby encouraging creative thinking, initiative, a sense of responsibility and the ongoing process of self-help,
- the avoidance of all forms of compulsion and imposition.

These principles of development which aim to encourage a greater degree of "self-help" and mobilization of available human and environmental resources have been translated into the following specific directives and guidelines to which The Valley Trust has adhered up to the present, and to which the success of the experiment is

probably largely attributable:

- the avoidance of hospitalization, where possible, and the encouragement of out-patient and domiciliary medical care,
- the exercising of care and circumspection in prescribing in patient management, with the purpose of discouraging unrealistic dependence on the curative aspect of medical care,
- the avoidance, where possible, of all commercially processed foods, fortified and otherwise, where it is considered the local and naturally grown product will suffice,
- the encouragement of the domestic vegetable garden as a necessity for health and not primarily as a subsistence measure,
- the encouragement of members of the community to participate in the activities of the overall socio-medical project whenever suitably qualified individuals are available,
- the encouragement of members of the Health Centre and Valley Trust staff to promote within the community, and participate in, a variety of cultural and recreational activities designed to foster understanding and good relations.

This chapter has been written in full awareness that,whereas in science an experiment can be evaluated in isolation, in a social experiment the multiplicity of influences to which human beings are subjected makes this an impossibility. It is thus extremely difficult to assess not only what factors have played a predominant part in the beneficial changes known to have taken place in the Valley but, of equal importance, what factors may have failed to support or have negated The Valley Trust

programme.

In any event, changes in attitude are clearly taking place in the Valley and increasing interest is being shown from without; at this present stage these developments may well be regarded as being of greater importance than material and measurable change.

APPENDIX A

F A M I L Y H E A L T H S U R V E Y

("W.H.O. Report"[1], Section 2, pages 100 to 155):

[1] Stott, H.H. (1959). A Pilot Study on Local Health Service and Family Health Survey at Botha's Hill, Natal, South Africa. World Health Organization, Geneva, W.H.O/PHA/33.

INTRODUCTION TO FAMILY HEALTH SURVEY

The 155 families considered in this survey were living within easy reach of the only access road to the sixty square mile study area. They were interviewed by two African field workers, a qualified nurse and a Health Assistant, using research questionnaires (Family and Individual schedules) supplied by the World Health Organisation.

The interviews were conducted over a period of twelve months during 1958. The selection of the families was not random and so the results may not be representative of the community as a whole.

In order to make future comparisons possible, the survey figures were analysed separately from three geographical areas - Nyuswa, Emaqadini and Embo. The three areas were not represented either equally or proportionately and figures were combined in most instances. The only marked difference noticed was in religious affiliation.

The extraction of data from questionnaires, as filled in by the interviewers, was undertaken without any mechanical aid or any form of punch card. Shortage of time and manpower did not always permit of checking and rechecking, and certain discrepancies in totals and sub-totals of age/sex distribution were allowed to stand.

continued

It was felt that these inaccuracies did not materially alter the overall picture. Every effort was made to eliminate material errors.

Only relevant information from the original Family and Individual questionnaires completed for the Pilot Health Study in 1958 has been retained for the purposes of this thesis.

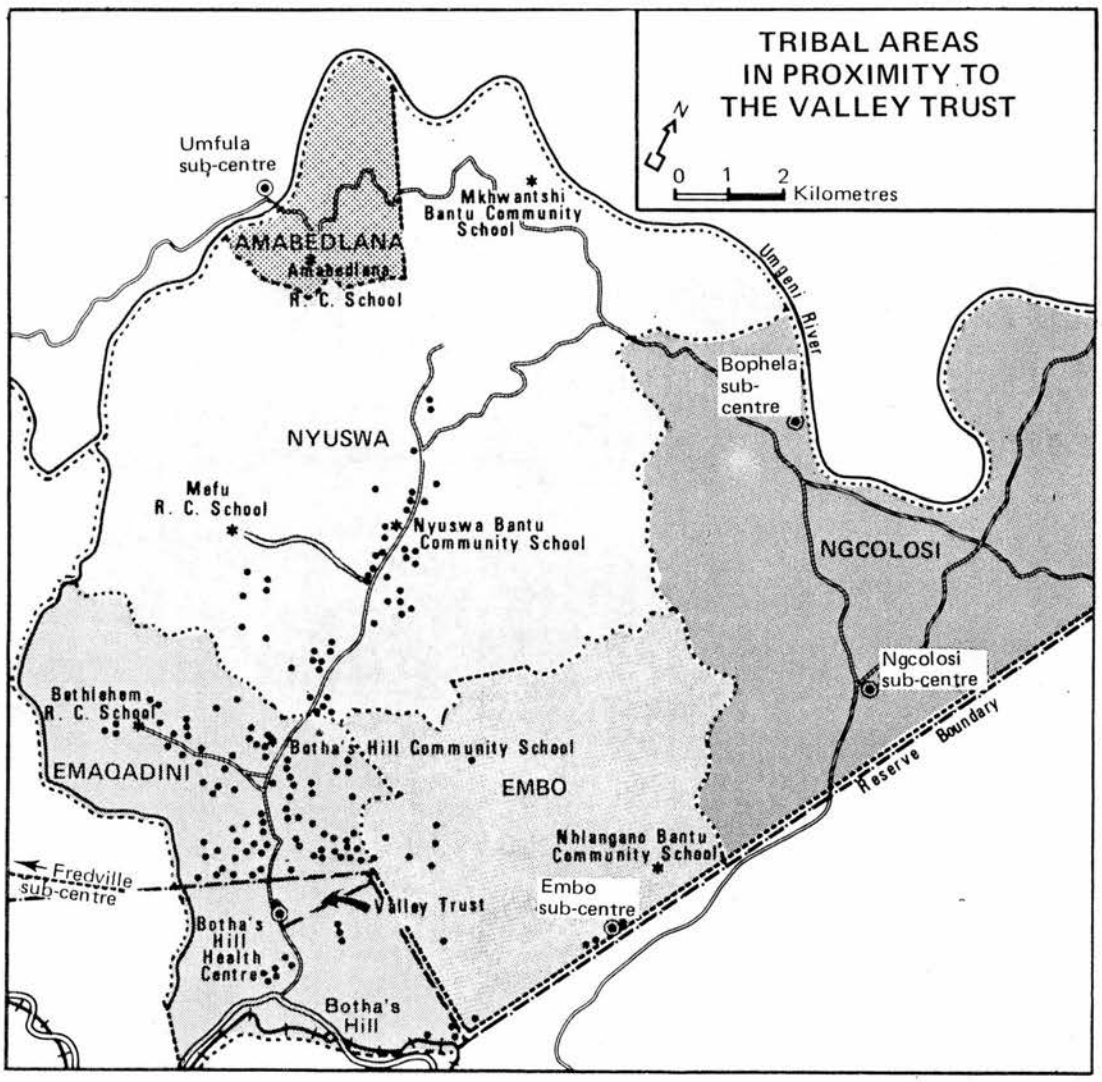

Fig. 24 Map showing position of households (kraals) used in the Family Health Survey.

APPENDIX A(a).

F A M I L Y S C H E D U L E

(See Appendix A(c) for Questionnaire No. 1)

(a) FAMILY SCHEDULE

1.)
) Not applicable
2.)
) to the area.
3.)
)
4.)

5. Usual occupation of head of family:

	M	F	T	M	F	T
Professional, Technical and Related Workers:						
Teacher	5	1	6			
Minister of Religion	1	-	1			
Catechists & Evangelists	3	-	3	9	1	10
Managers, Administrators & Officials:						
Beerhall proprietor	1	-	1			
Trader	2	-	2	3	-	3
Clerical, Office & Related Workers:						
Clerk	1	-	1	1	-	1
Salesmen & Related Workers:						
Stores Assistant	5	-	5			
Salesman	2	-	2			
Seller of Native Art	1	-	1	8	-	8
Workers in Operating Transport Occupations:						
Drivers	5	-	5			
Delivery Boy	1	-	1	6	-	6
Craftsmen, Factory Operatives, Manual Workers, Labourers, etc.						
French Polisher	1	-	1			
Weaver	2	-	2			
Painter	1	-	1			
Labourers	66	-	66			
Dressmaker	-	3	3	70	3	73
Services & Related Workers:						
Tribal Constable	2	-	2			
Night Watchman	2	-	2			
Policeman	1	-	1			
Dipping Assistant	1	-	1			
Domestic Service - Cooks	8	-	8			
- Others	1	8	9	15	8	23
Persons not gainfully employed:						
Pensioners	9	8	17			
Invalids	6	2	8			
Domestic Duties	-	2	2	15	12	27
Other Workers:						
Herbalist	3	-	3			
Isangoma	-	1	1	3	1	4
TOTAL:				130	25	155

6. FAMILY MEMBERS

6.1 Population: age and sex distribution

AGE	0-4			5-9			10-14			15-19			20-24			25-29			30-34		
	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T
EMBO	6	3	9	7	4	11	5	6	11	4	6	10	3	5	8	4	0	4	2	1	3
NYUSWA	12	23	35	15	20	35	9	18	27	8	9	17	5	7	12	4	12	16	11	7	18
EMAQADINI	40	45	85	41	47	88	15	24	39	15	23	38	14	28	42	15	15	30	20	18	38
TOTAL	58	71	129	63	71	134	29	48	77	27	38	65	22	40	62	23	27	50	33	26	59

AGE	35-39			40-44			45-49			50-54			55-59			60-64			65-69			70-74			75-79			80-84			85-89			90-94			95-99			TOTAL		
	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T
EMBO	0	1	1	1	3	4	0	2	2	2	3	5	0	1	1	1	1	2	2	0	2	0	1	1	2	0	2	0	0	0	0	0	0	0	0	0	0	0	0	39	37	77
NYUSWA	5	8	13	8	6	14	4	7	11	1	1	2	3	2	5	2	3	5	1	2	3	2	3	5	0	0	0	1	0	1	1	1	2	0	0	0	0	0	0	92	129	221
EMAQADINI	8	9	17	4	13	17	15	22	37	12	5	17	8	10	18	8	3	11	3	5	8	1	0	1	1	4	5	0	0	0	0	0	0	1	0	1	0	1	1	221	272	493
TOTAL	13	18	31	13	22	35	19	31	50	15	9	24	11	13	24	11	7	18	6	7	13	3	4	7	3	4	7	1	0	1	1	1	2	1	0	1	0	1	1	352	438	790

6.2 Family size

	Mode	Mean	Standard deviation
Embo	4	5.4	3.0
Nyuswa	4	4.8	2.4
Emaqadini	4	5.1	2.7
Total	4	5.1	2.7

Family size	Embo	Nyuswa	Emaqadini	Total	No. of persons
1	-	1	3	4	4
2	1	5	11	17	34
3	1	6	16	23	69
4	4	15	21	40	160
5	1	6	14	21	105
6	1	5	7	13	78
7	1	2	4	7	49
8	2	2	7	11	88
9	1	2	2	5	45
10	-	-	5	5	50
11	-	1	3	4	44
12	1	-	1	2	24
13	-	1	1	2	26
14	-	-	1	1	14
Total	13	46	96	155	790

7. HOUSING AND SANITATION:

7.1 Ownership of premises:

Self-owned	1
Rented	150
Squatters	4

7.2 Annual rental value:

£3	3
10/-	147

7.3 Present value of premises:

Value in £	No. of premises
5	18
10	20
15	26
20	35
25	18
30	10
35	9
40	-
45	4
50	3
55	-
60	2
65	-
70	-
75	1
80	2
85	1
150	1
200	1
300	1
550	1
800	2

continued

HOUSING AND SANITATION:

7.4 Total number of rooms (excluding kitchen):

Number of rooms	Number of dwellings
1	8
2	19
3	41
4	42
5	36
6	7
7	1
8	1
Total:	155

7.5 Presence of separate kitchen:

Yes	122	(78.7%)
No	33	(21.3%)
	155	

7.6 Toilet facilities:

Water closet (flush)	-	
Pail	-	
Pit	64	(41.3%)
None	91	(58.7%)
	155	

7.7 Disposal of human waste:

Treated	-	
Covered pit	64	(41.3%)
Surface	91	(58.7%)
	155	

Continued

HOUSING AND SANITATION

7.8 Water supply:

Tap inside house	-	
Tap outside house	3	
Protected well	3	
Running stream	145	(93.5%)
Tank water	4	
	155	

7.9 Heating facilities:

Central heating	-	
Stove or fire with chimney	19	
Stove without chimney	2	
Fire on floor	134	(86.4%)
	155	

7.10 Type of fuel for cooking:

Electricity	-	
Gas	-	
Coal	24	(15.5%)
Oil	-	
Wood	131	(84.5%)
Peat	-	
	155	

7.11 Lighting:

Electricity	-	
Gas	-	
Oil	-	
Paraffin	151	(97.4%)
Candles	4	
	155	

continued

HOUSING AND SANITATION

7.12(a) Bathing facilities:

Fitted bathtub or shower	1	
Galvanised iron bath	137	(88.3%)
Bucket, basin or 4 gal tins	12	
Running stream	5	
	155	

(b) Availability of hot water:

Yes	1	
No	154	(99.3%)
	155	

7.13 Adequacy of ventilation:
(as judged by prescribed standard)

Yes	132	(85.1%)
No	23	
	155	

7.14 Domestic pests:

Three homes only are recorded as free of pests. Pests include flies, mites, ticks, fleas, rats, cockroaches, lice, wasps, bugs and spiders.

7.15 Domestic animals:

Of the 155 households, 103 (16.5%) kept domestic animals as follows:-

Cattle	46
Fowls	89

so that 32 kept cattle and fowls;
14 kept cattle only;
57 kept fowls only.

In all instances cattle were kept in kraals and fowls in runs, and floors were earthen.

8. ECONOMIC LEVEL

8.1 Total income last year:

Total income £	Number of families
0-49	12
50-99	47
100-149	35
150-199	24
200-249	16
250-299	7
300-349	5
350-399	3
400-449	1
450-499	2
500-549	1
550-599	1
600-649	-
650-699	-
700-749	-
750-799	1
	155

These figures were NOT obtained from the Tax Officer

Mean income	£151
Lowest income recorded	£ 18
Highest income recorded	£770

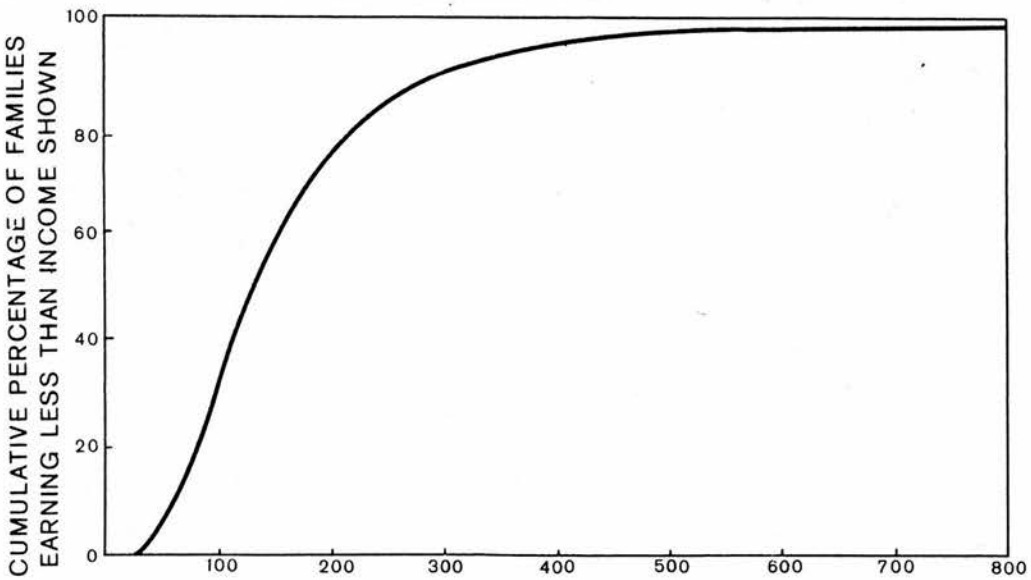

Fig. 25

ECONOMIC LEVEL (continued)

8.2 Division by the interviewer into economic classes:

Well-off
Middle-class
Poor

Assessment made by health assistant and nursing sister who are knowledgeable about local standards of living, but this is inevitably a subjective assessment.

8.3 Financial assistance:

No financial assistance ... 123 (79.3%)

Financial assistance:

Old age pension	17	
Invalidity grant	5	
Relatives	5	
Mission grant	3	
Widow's pension	1	
Old age pension plus invalidity grant	1	32
		155

An explanation of the comparatively few people (17) receiving old age pensions is that some of the older people prefer to continue to work since they earn at least four times as much as they would receive by way of the pension. Others are refused pensions by the magistrates if they are supported by their children. The possession of even one or two cows is a sufficient reason for some magistrates to refuse to grant an old age pension. If these people are prepared to dispose of their cattle they may apply again.

9. PARTICIPATION OF THE FAMILY AS A WHOLE IN:

9.1 Health insurance

No families participated.

9.2 Religious activities

No 7

Yes 148: (95.5%)

Methodist	37
Roman Catholic	33
Lutheran	21
American Board	17
Anglican	12
Zulu Congregational	7
Baptist	6
Full Gospel	4
Presbyterian	3
Assemblies of God	2
Jehovah's Witness	2
Zionist	2
American Congregational	1
Ka Moya	1

10. INTERVIEWER'S ASSESSMENT OF THE DEGREE OF CO-OPERATION IN SUPPLYING INFORMATION

Above average	22	14.2%
Average	127	81.9%
Below average	6	3.9%
Very poor	-	
	155	

11. FAMILY DIET

Six visits were made to each family at two monthly intervals during the course of the year. On some occasions no one was at home, and on others the cost of food was not recorded. The visits took place on various days of the week, as follows:

Mondays	285
Other days	612
Total	897

It was felt that the pattern of diet may vary between Sundays and other days, so the estimated cost of food was analysed separately for Monday visits (reflecting Sunday meals) and other visits (reflecting weekday meals).

From the estimated cost of food on page 202 it is apparent that the correlation is fairly close. The modal group in both instances is 12-14 pence per head per day.

The mean for Sundays is	16,9
for weekdays	17,9
for all days	17,6

It was therefore considered justified to consider all days together for the analysis of foodstuffs taken.

140 families were at home on all six occasions when the interviewer called. Only these are considered in the analysis of foodstuffs consumed.

The classification of foodstuffs was adapted to local conditions.

continued

FAMILY DIET

11.1 Nature of foodstuff

	No. of days on which foodstuff was eaten						
	0	1	2	3	4	5	6
Meat	-	2	15	33	42	33	15
Fish	138	2	-	-	-	-	-
Eggs	75	41	12	7	4	-	1
Potatoes, sweet potatoes, amadumbe	2	14	35	40	26	21	2
Legumes: mainly dry beans, occasionally ground nuts	17	52	45	15	11	-	-
Other vegetables: commonly onions, wild spinach, pumpkin, pumpkin tops, etc.	7	5	20	45	39	19	5
Fruit: mainly tomatoes, occasional guavas, bananas and other fruits	40	49	24	12	11	4	-
Refined Wheaten Products: mainly bought bread, occasional home baking	11	24	29	34	25	13	4
Unrefined Wheaten Products : Do.	33	34	26	22	18	5	2
Mealies & Products: Mealie meal, samp, mealie rice, green mealies, mealie bread	-	-	-	1	1	8	130
Rice	131	8	1	-	-	-	-
Cow's Milk: usually amasi, occasionally fresh	114	11	6	6	1	2	-
Condensed Milk: usually in tea	-	-	1	2	12	21	104
Margarine and butter	119	16	4	1	-	-	-
Saturated fats	8	27	47	37	18	3	-
Unsaturated fats	108	25	5	2	-	-	-
Zulu Beer	110	23	5	2	-	-	-
Other Alcohol: usually gavin, shimeyane, occasionally brandy	120	16	2	1	1	-	-
Mahewu	50	45	30	12	1	-	-
Tea & Coffee: usually tea, rarely coffee	-	-	1	-	4	135	-
Sugar etc: includes jam and sugar cane	-	-	1	1	-	3	136
Spices: curry powder, chillies and chillie powder	42	49	31	15	2	1	-

continued

FAMILY DIET

11.1 Nature of foodstuff (continued)

Meat consumption - Sundays and weekdays

293 visits were made on Mondays and 616 visits on other days - representing Sunday and weekday meals respectively. (These figures differ slightly from those on page 202 as in a few instances the cost of meals was not recorded.)

Meat was eaten on 191 Sundays or 65.2% and on 407 weekdays or 66.1%. The difference is not significant.

Sunday Meals

No. of visits	Number of times meat was eaten						
	0	1	2	3	4	5	6
0	20						
1	15	29					
2	5	19	19				
3	3	4	14	11			
4	-	3	2	8	-		
5	-	-	1	1	1	-	
6	-	-	-	-	-	-	-

continued

FAMILY DIET

11.1 Nature of foodstuff (continued)

Weekday Meals

No. of Visits	Number of times meat was eaten						
	0	1	2	3	4	5	6
0	-						
1	3	2					
2	2	6	6				
3	1	7	16	13			
4	-	2	20	14	5		
5	-	3	5	15	12	5	
6	-	-	1	4	6	6	1

In 31 instances three visits were on Mondays and three on other days. The meat consumption of these 31 families is analysed below, and it will be seen that meat was not eaten more frequently on Sundays.

Weekdays on which meat was eaten	Sundays on which meat was eaten				
	0	1	2	3	Total
0	-	-	1	-	1
1	2	-	1	-	3
2	-	3	8	3	14
3	1	1	3	8	13
Total	3	4	13	11	31

continued

FAMILY DIET

11.1 Nature of foodstuff (continued)

General comment on foodstuffs taken

Bread:

It should be noted that most families took a mixture of white and brown bread, though not both on the same day. The average intake of bread - white and brown - was 4.5 times in six days.

Fats:

Fats of more than one kind were not used on the same day. Considering saturated and unsaturated fats, butter and margarine together, the average intake was 2.75 times in six days.

Butter and margarine[1] hardly appear in the Valley dietary, but saturated fats are used by everybody. Unsaturated fats are beginning to appear. A distinction has been made between saturated and unsaturated fats with a view to possible correlation at a later date with cardio-vascular disease.

Rice and Mealie Products:

On most of the days on which mealies or mealie products were not eaten, rice was taken.

Meat:

The discrepancy between text[2] and figures concerning the frequency in the consumption of meat is probably

continued

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[1] In 1958 this was made largely with Whale-oil

[2] Chapter II, p. 20.

FAMILY DIET

11.1 Nature of foodstuff (continued)

explained by the fact that the families in the Family Health Survey live within easy reach of the Botha's Hill Butchery.

Fish:

The group inhabits an area far removed from the river and lacking in streams containing fish. The absence of fresh fish from their dietary does not alter the general opinion that fish, where it is easily available, is beginning to be acceptable to a few Zulus, particularly the younger generation.

It is known that along the coastal belt the African people are keen fishermen and consume large quantities of their catches. It has not yet been ascertained whether or not sea-water fish were exempt from the general prejudice against fish in earlier years.

Eggs:

These findings are consistent with the text. The number of fowls kept has little bearing on the number of eggs eaten, since the Zulu prefer to have the eggs hatched out and to eat the birds in due time.

Other vegetables:

The general use of vegetables by this group may be explained by its proximity to the Health Centre which has for eight years laid emphasis on the importance of fresh vegetables, and also to The Valley Trust agricultural projects, such as the Home Produce Market, the demonstration plots etc.

continued

FAMILY DIET

11.1 Nature of foodstuff (continued)

Fruit and tomatoes:

The Zulu are not fruit eaters, and tomatoes probably account for the bulk of these figures.

Zulu beer:

The figures bear out what has been said in the text. The diminishing use of this nutritious drink and its replacement by spirits is a tragedy in the Reserve.

Alcohol:

The figures are entirely unacceptable. Since the distilling and consumption of these spirits are illegal, it is hardly to be expected that anyone will admit to their use.

Tea and Coffee:

No family drinks coffee to the total exclusion of tea and few people drink coffee at all. Tea has become the universal drink, taken with or without milk but usually sweetened condensed milk.

Cocoa: The figures were too insignificant to be recorded.

Milk:

The absence of fresh milk as compared with sweetened condensed milk is borne out by these figures. A discrepancy arises with regard to the number of families who keep cattle, i.e. 46 out of 155 families (see Domestic animals). Allowance must be made for oxen used for ploughing, and poor milk yields resulting from bad pasture in the Reserve.

continued

FAMILY DIET

11.1 Nature of foodstuff (continued)

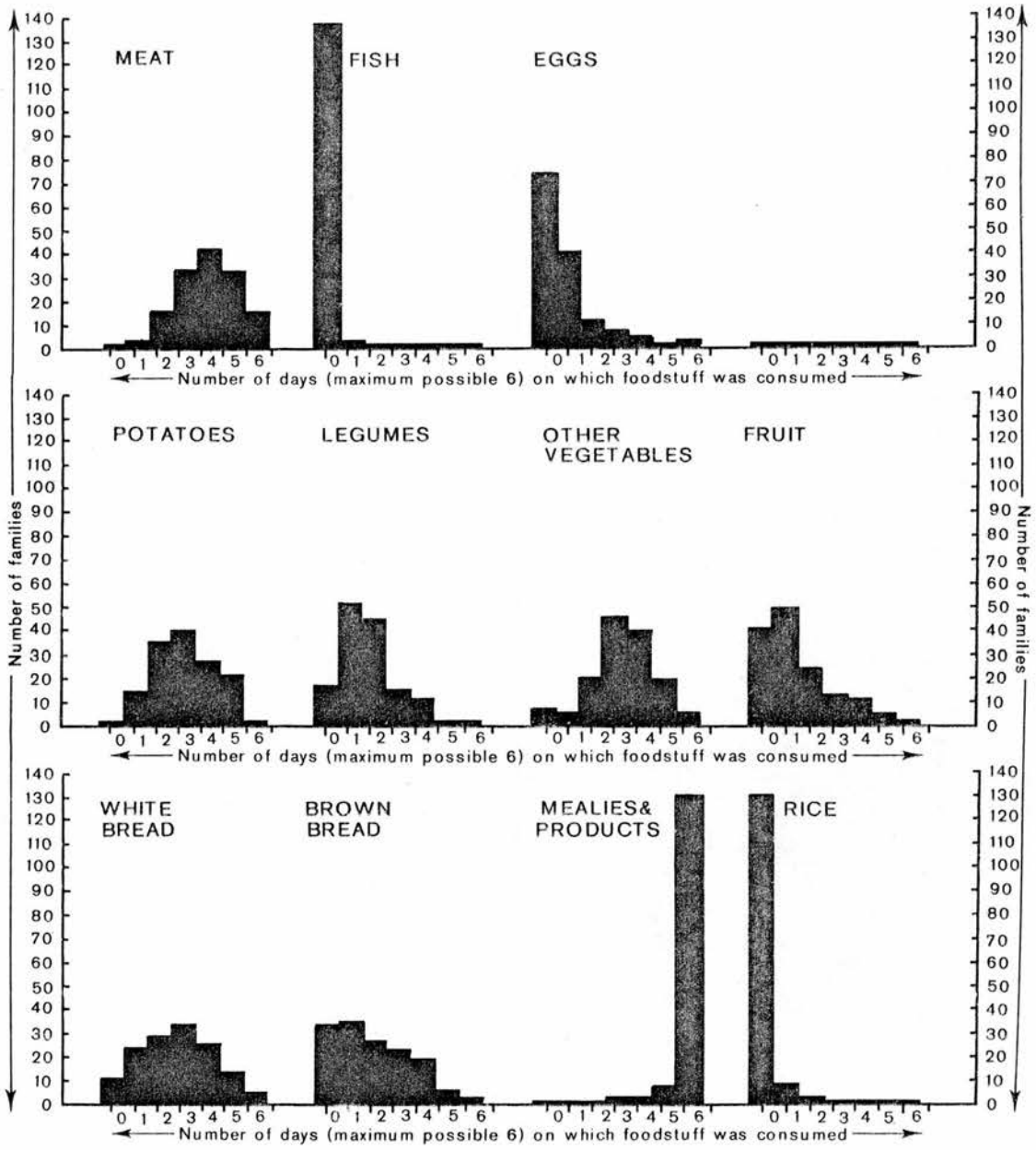


Fig. 26 Nature of foodstuff - frequency of consumption

continued

FAMILY DIET

11.1 Nature of foodstuff (continued)

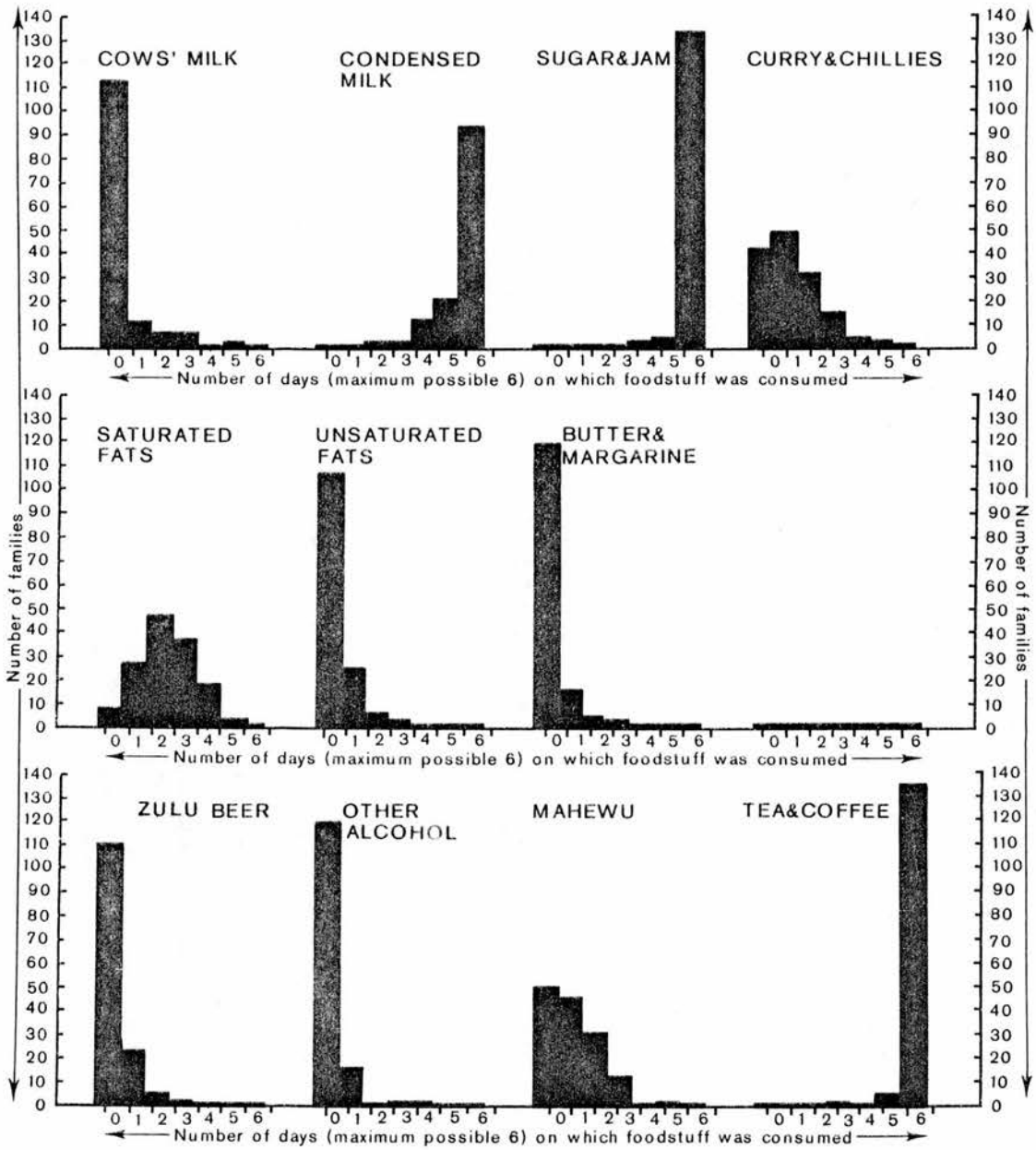


Fig. 27 Nature of foodstuff - frequency of consumption

continued

FAMILY DIET

11.1 Nature of foodstuff (continued)

Summary: The figures in general offer a distressing confirmation of the constantly reiterated fact that the population of the Valley lives mainly on maize products, tea, sweetened condensed milk and sugar. The part played by sugar cane may be disregarded. It is practically non-existent in the Reserve.

11.2 Food taken outside the family

Food taken outside the family was recorded in detail by the interviewers. Subsequently, this was divided roughly into three categories:

Meals, with good protein content;

light meals and snacks, non-alcoholic beverages etc;

alcohol.

When alcohol was taken with a meal, an entry was made in both categories:

		Meals	Snacks, etc.	Alcohol
Sundays	individual instances	12	19	33
	families represented	11	17	24
Weekdays	individual instances	52	57	75
	families represented	33	38	46
Total	individual instances	64	76	108
	families represented	42	50	59

With a potential total, even at one meal per day,

continued

FAMILY DIET

11.2 Food taken outside the family (continued)

of some 800 000 (the product of the number of visits 897, and the population 790), a more detailed analysis was not considered warranted.

11.3 Estimated cost of food

Market prices in Botha's Hill, Natal obtained from a local trader who has stores within and outside the Reserve

Meat -	2/- per lb.
- Offal	9d per lb.
Fish - (tinned)	
Pilchards (S.A.)	
- plain	10d ½ lb. tin
-	1/4 1 lb. tin
- in tomato sauce	1/- ½ lb. tin
-	1/6 1 lb. tin
Sardines (imported)	1/- 3¾ oz. tin
Eggs -	3/- doz. average
Potatoes - round)	
- sweet)	4d. per lb.
- amadumbis)	
Beans - dried	1/- per lb.
Cabbage	3d per lb.
Ground nuts	9d per lb.
Onions	4d per lb.
Pumpkin	3d per lb.
Bananas	1/3 per doz.
Tomatoes	9d per lb.
Green mealies	3d each
Mealie meal	3d per lb.
Mealie rice	3d per lb.
Samp	3d per lb.
White bread	10d 2-lb. loaf
Brown bread	8d 2-lb. loaf

continued

FAMILY DIET

11.3 Estimated cost of food (continued)

White flour	5d per lb.
Jam	1/1 per tin
Sugar - white	5¼d per lb.
- brown	4d per lb.
Fresh milk	7d per pint
Condensed milk (sweetened)	1/4 14-oz. tin
Tea	5/- per lb.
Coffee	4/- per lb.
Cocoa	1/6 4-oz. tin
Margarine	2/4 per lb.
Butter	3/4 per lb.
Dripping	1/6 per lb.
Cooking oil	2/6 bottle 26 ozs. approx.

Cost of food per head per day

Pence	Weekdays	Sundays
0 - 2	-	-
3 - 5	1	1
6 - 8	7	11
9 - 11	23	24
12 - 14	35	29
15 - 17	26	25
18 - 20	22	16
21 - 23	16	9
24 - 26	7	7
27 - 29	6	2
30 - 32	4	3
33 - 35	3	2
36 - 38	2	1
39 - 41	-	2
42 - 44	-	1
45 - 47	1	-
48 - 50	-	1
Total	155	134

(See Scatter diagram p. 204)

11.3 Estimated cost of food (continued)

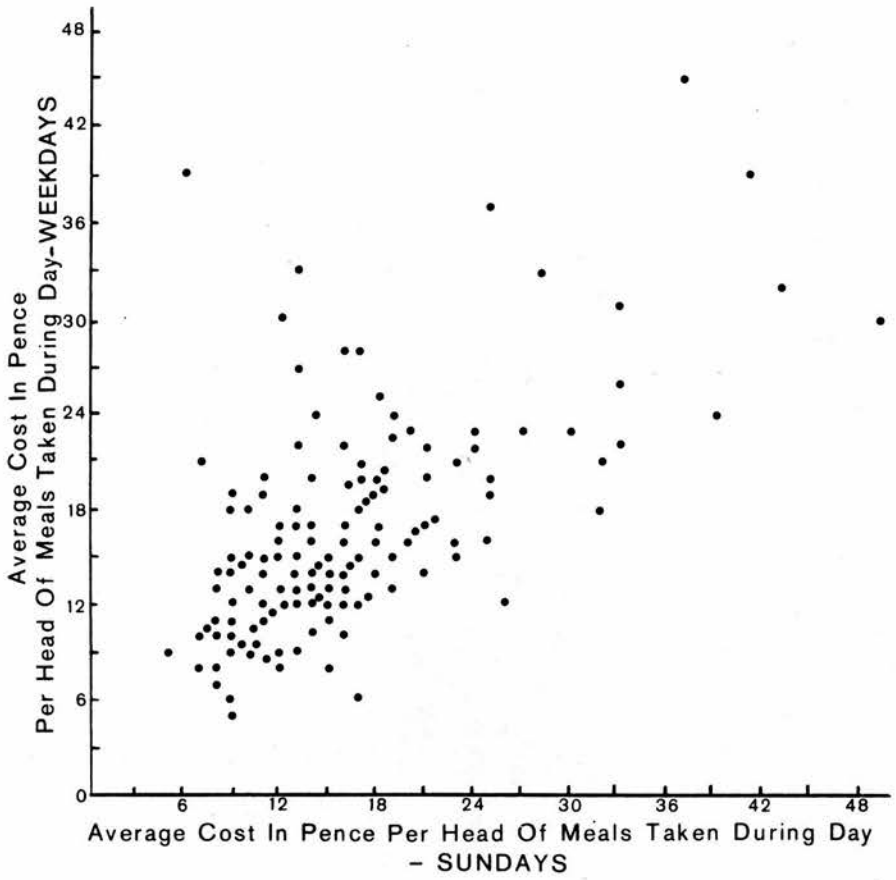


Fig. 28 Scatter Diagram.

Average cost in pence per head of meals taken during day - Weekdays and Sundays

FAMILY DIET

11. 3 Estimated cost of food (continued)

Highest and lowest costs and range

Pence	Highest cost per head per day for foodstuffs eaten in 24 hours	Lowest cost per head per day for foodstuffs eaten in 24 hours	Range between highest and lowest costs
0- 2	-	-	1
3- 5	-	25	3
6- 8	-	46	12
9-11	2	41	26
12-14	11	28	30
15-17	20	5	22
18-20	15	5	14
21-23	26	-	14
24-26	12	2	6
27-29	17	3	12
30-32	10	-	5
33-35	12	-	4
36-38	5	-	2
39-41	8	-	-
42-44	5	-	2
45-47	3	-	-
48-50	2	-	-
51-53	4	-	1
54-56	-	-	-
57-59	-	-	-
60-62	1	-	-
63-65	-	-	1
66-68	1	-	-
69-71	1	-	-

Continued

FAMILY DIET

11.3 Estimated cost of food (continued)

Highest and lowest costs and range (continued)

21% of families spent less than 1/6 per head per day on food on all occasions;

48% of families spent less than 2/- per head per day on food on all occasions;

67% of families spent less than 2/6 per head per day on food on all occasions;

80% of families spent less than 3/- per head per day on food on all occasions;

90% of families spent less than 1/3 per head per day on food on at least one occasion;

46% of families spent less than 9d per head per day on food on at least one occasion;

16% of families spent less than 6d per head per day on food on at least one occasion.

The widest range was in a small family - 2 persons on 1 visit and 1 person on each of the other 5 visits.

The range was from 6d to 5/11d, and the mean 2/9d.

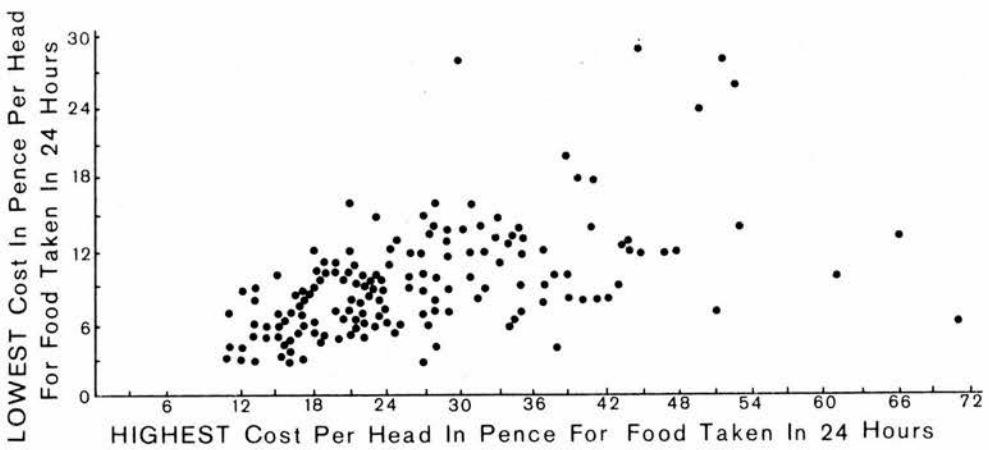


Fig.29 Scatter Diagram. HIGHEST and LOWEST cost in pence for food taken in 24 hours.

APPENDIX A(b)

I N D I V I D U A L S C H E D U L E

(See Appendix A(c) for Questionnaire No. 2)

(b) INDIVIDUAL SCHEDULE

1.)
2.) Not
3.) applicable
4.) to the
5.) area.
6.)
7.)

8. RELATIONSHIP TO HEAD OF FAMILY:

Head	155
Spouse	119
Brother	5
Sister	4
Son	193
Daughter	219
In-law	4
Other adult relatives	3
Parent	11
Grandchild	68
Other	9
	790

9. MARITAL STATUS:

Age in years	Single			Married			Widowed			Divorced			Separated			Living together : not married			Total		
	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T
15-19	29	34	63	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	29	35	64
20-24	18	25	43	2	9	11	-	-	-	-	-	-	-	-	-	-	-	-	20	34	54
25-29	15	13	28	8	17	25	-	-	-	-	-	-	-	-	-	-	-	-	23	30	53
30-34	4	4	8	25	23	28	1	1	2	1	-	1	-	-	-	-	-	-	31	28	59
35-39	-	-	-	13	12	25	-	-	-	-	-	-	-	-	-	-	1	1	13	13	26
40-44	1	1	2	10	18	28	3	2	5	-	-	-	1	-	1	-	-	-	14	22	36
45-49	1	1	2	17	23	40	2	6	8	1	-	1	-	-	-	-	-	-	20	31	51
50-54	1	-	1	13	4	17	5	3	8	-	-	-	-	-	-	1	-	1	20	7	27
55-59	-	-	-	10	8	18	-	4	4	-	-	-	-	-	-	-	-	-	10	12	22
60 and over	-	-	-	25	24	49	4	18	22	-	-	-	-	-	-	-	-	-	29	42	71
Total	69	78	147	123	139	262	15	34	49	1	1	2	-	1	1	1	1	2	209	254	463

10. GAINFUL EMPLOYMENT - STATUS AT FIRST VISIT

Age in years	15 - 19			20 - 24			25 - 29			30 - 34			35 - 39			40 - 44		
	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T
Employed	13	6	19	15	14	29	22	9	31	30	4	34	13	1	14	14	6	20
Partly employed	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Not employed	17	31	43	6	25	31	1	17	18	2	24	26	2	14	16	-	17	17
Total	30	37	67	21	39	60	23	26	49	32	28	60	15	15	30	14	23	37

Age in years	45 - 49			50 - 54			55 - 59			60 - 64			63 & over			Total		
	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T
Employed	16	7	23	12	5	17	9	1	10	7	-	7	2	-	2	153	53	206
Partly employed	-	-	-	2	-	2	-	-	-	1	-	1	2	1	3	5	1	6
Not employed	3	24	27	1	5	6	2	11	13	2	6	8	11	17	28	47	191	238
Total	19	31	50	15	10	25	11	12	23	10	6	16	15	18	33	205	245	450

NOTE: No children under 15 years were employed.

Duration of unemployment in months

Two persons stated they were unemployed for periods of 16 and 20 months.

Note: Notwithstanding the number in 10 given as unemployed, it would appear that only these two persons are desirous of employment.

11. USUAL OCCUPATION OR PROFESSION: ALL PERSONS FIFTEEN YEARS AND OVER

		M	F	T	M	F	T
Professional, technical and related workers							
Teacher		6	4	10			
Minister of religion		1	-	1			
Catechists and Evangelists		3	-	3			
Nurse		1	6	7	11	10	21
Managers, administrators and officials							
Beerhall proprietor		1	-	1			
Trader		2	-	2	3	-	3
Clerical, office and related workers							
Clerk		1	-	1			
Compositor		1	-	1	2	-	2
Salesmen and related workers							
Stores assistant		6	2	8			
Salesmen		2	-	2			
Seller of native art		1	-	1	9	2	11
Farmers and related workers							
Market gardener		1	1	2	1	1	2
Workers in operating transport occupations							
Driver		5	-	5			
Delivery boy		1	-	1	6	-	6
Craftsmen, factory operatives, manual workers, labourers, etc.							
French polisher		1	-	1			
Weaver		2	-	2			
Painter		1	-	1			
Dressmakers		-	3	3			
Labourers		115	-	115	119	3	122
Services and related workers							
Tribal constable		2	-	2			
Night watchman		2	-	2			
Policeman		1	-	1			
Dipping assistant		1	-	1			
Domestic service:	cooks	9	-	9			
	waiter	1	-	1			
	other	1	39	40	17	39	56
Other and unidentifiable							
Herbalist		3	-	3			
Isangoma		-	2	2	3	2	5

continued

11. USUAL OCCUPATION OR PROFESSION: ALL PERSONS FIFTEEN YEARS AND OVER. (Continued)

	M	F	T	M	F	T
Not gainfully employed						
Scholars and students	21	23	44			
Pensioners	7	-	7			
Invalids	6	1	7			
Domestic duties	-	165	165	34	189	223
				205	246	451

Occupations of 100 persons, other than heads of families, who are gainfully employed.

		M	F	T
Teachers		1	3	4
Nurses		1	6	7
Compositor		1	-	1
Stores assistant		1	2	3
Market gardeners		1	1	2
Labourers		49	-	49
Domestic service:	cooks	1	-	1
	waiters	1	-	1
	other	-	31	31
Isangoma		-	1	1
	TOTAL:	56	44	100

12. TRADE AND INDUSTRY

Answers to this question were inadequate for analysis.

13. EDUCATIONAL STATUS

13.1 Number of years in school, college or technical institution

AGE IN YEARS	0		1		2		3		4		5		6		7		8		9		10		11		12		13		14		15		16		TOTAL
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	
5-9	43	35.2	30	24.6	18	14.8	26	21.3	5	4.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	122
10-14	7	9.2	1	1.3	3	3.9	15	19.7	14	18.4	16	21.1	9	11.8	4	5.3	6	7.9	1	1.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	76
15-19	8	11.6	1	1.4	2	2.9	6	8.7	10	14.5	7	10.1	7	10.1	5	7.2	9	13.0	4	5.8	6	8.7	4	5.8	-	-	-	-	-	-	-	-	-	-	69
20-24	5	8.6	1	1.7	2	3.4	6	10.3	10	17.2	3	5.2	12	20.7	3	5.2	4	6.9	2	3.4	2	3.4	5	8.6	1	1.7	2	3.4	-	-	-	-	-	-	58
25-29	5	9.8	-	-	2	3.9	4	7.8	7	13.7	2	3.9	11	21.6	3	5.9	3	5.9	4	7.8	4	7.8	[illegible]	[illegible]	1	2.0	3	5.9	-	-	-	-	-	-	51
30-44	20	16.7	2	1.7	4	3.3	19	15.8	20	16.7	8	6.7	17	14.2	6	5.0	9	7.5	5	4.2	8	6.7	1	0.8	-	-	-	-	-	-	-	-	1	0.8	120
45-59	42	41.6	-	-	1	1.0	15	14.9	18	17.8	10	9.9	6	5.9	3	3.0	2	2.0	1	1.0	1	1.0	2	2.0	-	-	-	-	-	-	-	-	-	-	101
60 and over	33	68.8	-	-	1	2.1	2	4.2	9	18.8	2	4.2	-	-	1	2.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	48

Note: The younger generations are receiving more schooling than their elders enjoyed.

Age in years	0-5	6-11	12-15	16-20	20 + over
Not at school	154	31	3	35	371
Attending school	-	108 (77.7%)	54 (94.7%)	34 (49.3%)	
Total	154	139	57	69	371

The unusual age-groupings were chosen for the following reasons:

(a) children are not accepted at school until the sixth year;

(b) school attendance is not "compulsory" after 16 years.

EDUCATIONAL STATUS

13.2 Educational status of persons over 16 years (excluding those still at school)

	Male	Female	Total
Nil	65 35.1%	52 23.5%	117 28.8%
Substandard 1	2 1.1%	1 0.5%	3 0.7%
Substandard 2	5 2.7%	5 2.3%	10 2.5%
Standard 1	22 11.9%	32 14.5%	54 13.3%
Standard 11	23 12.4%	47 21.3%	70 17.2%
Standard 111	14 7.6%	14 6.3%	28 6.9%
Standard 1V	17 9.2%	27 12.2%	44 10.8%
Standard V	10 5.4%	11 5.0%	21 5.2%
Standard V1	4 2.2%	11 5.0%	15 3.7%
Standard V11	5 2.7%	8 3.6%	13 3.2%
Standard V111	10 5.4%	4 1.8%	14 3.4%
Standard 1X	2 1.1%	4 1.8%	6 1.5%
Standard X	-	1 0.5%	1 0.2%
Teachers	6 3.2%	4 1.8%	10 2.5%
Total	185	221	406

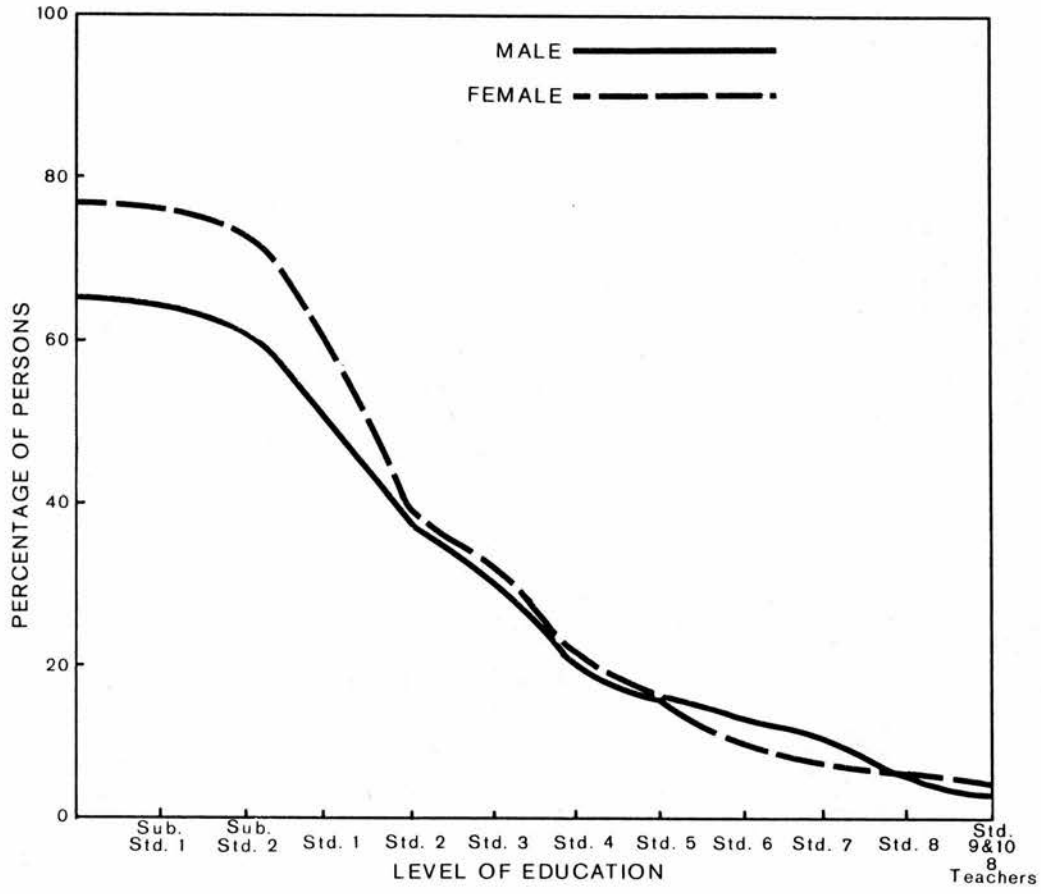
Note: Standard X is matriculation equivalent.
Teachers - details of basic education not known, but few will have reached matriculation level.

continued

EDUCATIONAL STATUS

13.2 Educational status of persons over 16 years (excluding those still at school) (continued)

Cumulative frequency curve showing level of education reached by persons over 16 years of age (excluding those still at school)



EDUCATIONAL STATUS

13.3 Educational status of persons still attending school

Age-group in years	6 - 11		12 - 15		16 & over	
	M	F	M	F	M	F
Substandard I	13	17	-	-	-	-
Substandard II	12	9	-	2	-	-
Standard I	14	22	1	4	1	-
Standard II	5	7	2	6	1	-
Standard III	2	4	4	7	2	-
Standard IV	2	1	7	4	3	1
Standard V	-	-	3	7	-	-
Standard VI	-	-	-	6	3	6
Standard VII	-	-	-	-	1	3
Standard VIII	-	-	1	-	2	3
Standard IX	-	-	-	-	2	6

Note: The standard (if any) reached by the 34 persons under 16 years who are not attending school was not recorded.

14. DISABLING DEFECTS AT TIME OF FIRST VISIT

14.1 Nature:

Pulmonary tuberculosis	6
Cardiac conditions	5
Encephalitis	2
Cerebral Haemorrhage, hemiplegia	2
Leprosy	1
Malnutrition	1
Severe emaciation	1
Sciatica plus blindness	1
Epilepsy	1
Blindness	1
Chronic bronchitis and emphysema	1
Chronic alcoholism	1
	23

14.2 Duration of disability in years:

Less than 1 year	5
1 year	3
2 years	5
3 years	4
4 years	3
5 years	1
6 years	1
7 years	-
8 years	1
	23

DISABLING DEFECTS

14.3 Severity of disability:

Complete	15
Partial	5
Slight	3
	23

14.4 Medical attention received by total population: 790

Medical attention said to be received by 773 persons as follows:-

Private practice	773
Botha's Hill Health Centre	773
Indigenous medicine man	773

It is extremely difficult to get an accurate reply from the Zulu patient to a question relating to the source of medical attention. In this instance there is no doubt that the replies were deliberately evasive, although it is quite possible that all the questioned individuals would use all three sources at one time or another if they were available. The reason for doubting their replies as to the use of private medical practitioners is that there are relatively few such practitioners visiting the areas and then only at infrequent intervals.

Nevertheless, it is common practice, and well known throughout South Africa, for Africans to attend a clinic, receive the fullest attention and treatment, and an explanation of the disability, collect the cherished bottles of medicine and proceed to another doctor in the hope of accelerating the recovery by a double dose of treatment.

continued

DISABLING DEFECTS

14.4 Medical attention received by total population: 790 (continued)

With his mystical conceptions of disease and his fear of witchcraft, he continues to seek advice, expecting it ultimately to confirm his suspicion of witchcraft. A man may well attend the Health Centre wearing a goatskin bracelet around his wrist, receive an injection of penicillin for some infective condition, then go on to another doctor who, knowing nothing of his previous visit, duplicates the treatment. Within 24 hours the man, not yet having felt the benefit of the penicillin, proceeds to an Inyanga who then gets the credit for the improvement in the man's condition which has been brought about by the two injections of penicillin.

15. VACCINATION STATUS

		AGES IN YEARS:	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65 & over
		TOTAL PERSONS:	130	114	92	67	53	56	59	28	32	46	27	24	16	37
SMALLPOX VACCINATION		Not Vaccinated	100	37	6	1	-	-	1	-	-	-	-	-	-	-
		Vaccinated within 0 - 1 yr	6	10	2	-	-	1	1	-	-	-	1	-	1	1
		Vaccinated within 1 - 4 yrs	24	54	55	13	4	3	1	-	1	2	2	1	-	3
		Vaccinated within 5 - 9 yrs	-	12	23	36	23	9	12	3	3	10	2	1	4	2
		Vaccinated 10 yrs or over	-	1	6	17	26	43	44	25	28	34	22	22	11	28
		TOTAL Vaccinated	30 % 23.1	77 % 67.6	86 % 93.5	66	53	56	58	28	32	46	27	24	16	34
	Diptheria		72 % 55.4	70 % 61.4	22 %											
	Whooping Cough		72 % 55.4	70 % 61.4	22 %											
	Typhoid & Tetanus		72 % 55.4	70 % 61.4	22 % 23.9											

(Comments following page)

VACCINATION STATUS

Vaccination status 1951: 3 248 persons attending Botha's Hill Health Centre

Age	Total attending	Answers recorded	% known	History of Vaccination			% Vaccination of total	% Vaccination of those known
				Yes	No	%		
0 - 1	131	120	91.6	0	120	11	0	0
1 - 6	940	700	74.5	500	200	240	21.3	28.6
7 - 11	319	248	77.7	223	25	71	69.9	89.9
12 and over	1 858	1 542	83.0	1 532	10	316	82.5	99.4

Comment on vaccination figures

Comparing 1951 and 1958 vaccination figures, the percentage of pre-school children is small, as illustrated by the following:

1 - 6 years group in 1951 28.6%
0 - 4 " " " 1958 23.1%

Vaccination appears to be carried out when children go to school:

7 -11 years group in 1951 89.9%
10 -15 " " " 1958 93.5%

Well over 99% of the adults in both years have been vaccinated. Exact age groups are not available.

16. USE OF ALCOHOL:

Ages in years	15 - 19			20 - 24			25 - 29			30 - 34			35 - 39			40 - 44		
	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T
None	20			10			5			6			3			2		
		33			29			24			25			11			18	
			53			39			29			31			14			20
Occasional & moderate	8			6			13			17			9			6		
		5			8			3			1			3			1	
			13			14			16			18			12			7
Excessive	2			5			6			10			2			5		
		0			1			0			3			1			3	
			2			6			6			13			3			6
Total	30			21			24			33			14			13		
		38			38			27			29			15			22	
			68			59			51			62			29			35

Ages in years	45 - 49			50 - 54			55 - 59			60 - 64			65 & over			Total		
	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T
None	4			4			3			0			4			61		
		23			7			7			4			15			196	
			27			11			10			4			19			257
Occasional & moderate	10			5			6			8			6			94		
		4			3			2			2			1			33	
			14			8			8			10			7			127
Excessive	5			6			2			4			3			50		
		4			0			3			1			1			17	
			9			6			5			5			4			67
Total	19			15			11			12			13			205		
		31			10			12			7			17			246	
			50			25			23			19			30			451

No children under 15 years used alcohol.

The obvious discrepancy between text and figures is, again, not surprising. Much depends on the individual drinker's ideas as to what constitutes excessive drinking. It is extremely difficult to reconcile the total of those who do not partake of alcohol at all with the observations of medical personnel in the Valley. Evasive replies are again inevitable, since none of the questioned wished to reveal their habits in this regard.

17. INFANT FEEDING
(incorporating 17.1 and 17.2 of Questionnaire No. 2)

	Age	Age at which breast-feeding discontinued	Age at which artificial feeding commenced
Weeks:	0	26	26
	1	1	-
	2	-	-
	3	-	-
Months:	1	3	2
	2	1	1
	3	3	3
	4	-	-
	5	-	-
	6	1	1
	7	-	-
	8	1	1
	9	-	-
	10	1	1
	11	-	-
	12	2	2
	13	1	1
	14	1	1
	15	2	2
	16	5	5
	17	-	-
	18	1	1
	19	1	1
	20	-	-
	21	-	-
	22	1	1
		51	49

Note: Questions about infant feeding were asked up to the age of 2 years.

More than 50% of the mothers commenced artificial feeds immediately after delivery.

17.3 Supplementary feeding
(Incorporating 17.4 of Questionnaire No. 2)

Age at which supplementary feeding commenced	Weeks				Months						
	0	1	2	3	1	2	3	4	5	6	7
Total receiving supplementary feeding	-	4	8	3	13	9	4	3	-	2	1
Nature of supplementary food											
Cow's milk	-	1	-	-	-	3	-	-	-	-	-
Powdered milk	-	-	4	3	-	-	-	2	-	-	-
Humanized cow's milk	-	1	1	-	3	1	-	-	-	-	-
Sweetened condensed milk	-	-	-	2	-	-	-	-	-	-	-
Home-made incumbe	-	3	4	2	9	6	4	2	-	2	-
Proprietary incumbe	-	-	-	-	1	2	-	-	-	-	-
Other proprietary baby cereal	-	-	-	-	1	-	-	-	-	-	-
Mealie porridge	-	2	2	-	2	3	2	1	-	-	1
Boiled water with sugar	-	2	2	1	2	1	-	-	-	-	-
Potato	-	-	2	-	1	-	-	-	-	-	-
Cabbage	-	-	1	-	-	-	-	-	-	-	-
Pumpkin	-	-	1	-	1	1	-	-	-	-	-

Note: Many infants were given more than one supplement. 'Home-made incumbe' is a watery gruel of fine sifted mealie-meal, or mabela (Sorghum vulgare), fed to infants from feeding bottles.

18. PREGNANCY RECORD

No. of previous pregnancies	No. of persons	Total no. of previous pregnancies
1	30	30
2	23	46
3	36	108
4	20	80
5	8	40
6	13	78
7	11	77
8	10	80
9	12	108
10	13	130
11	5	55
12	1	12
13	3	39
	185	883

Number of still-births 23
Number of foetal deaths 47

Unfortunately an analysis of the pregnancy record by age-group is not available, but it should be noted that in the population studies, there were 248 women of 15 years and over, and 210 women 20 years and over.

It would be unwise to infer a still-birth rate from these figures.

It was difficult to elicit the nature of foetal deaths. The analysis into induced and spontaneous was omitted as it was considered unreliable.

19. COMMUNITY PARTICIPATION

19.1 Public bodies:

Tribal elder	8
School board	3
School committee	5
Tribal constable	3
Tribal secretary	2
Ministers' Association and school committee	1
	22

19.2 Not applicable.

19.3 Not applicable.

19.4 Social activities:	19.5 Recreational clubs
Organised by schools, Y.M.C.A. and Y.W.C.A.	206	200
Tribal and Ngoma	39	22
Football, musical groups	16	15
Roman Catholic youth clubs	13	13
Nyuswa youth club	8	8
Botha's Hill youth club	3	3
Musical group	6	6
School activities	3	11
Tennis club	1	1
Community activities	9	9
Football	-	8

With the exception of the groups organised by schools and churches, all of the above had been started since the launching of The Valley Trust socio-medical experiment in 1951.

20. PARTICIPATION OF INDIVIDUALS OVER AGE OF 15 (451) IN INSURANCE SCHEMES:

20.1	Sickness	3	0.66%
20.2	Accidents	34	7.54%
20.3	Unemployment	32	7.09%
20.4	Invalidity	7	1.55%
20.5	Old age	26	5.76%
20.6	Maternity	-	-
20.7	Death	13	2.88%
	None	336	74.50%

21. RELIGIOUS AFFILIATION:

Nyuswa		Emaqadini		Emho		Combined areas	
Lutheran	80	Methodist	140	Pagan	22	Methodist	178
Roman Catholic	42	Roman Catholic	113	Zulu Baptist	14	Roman Catholic	160
Methodist	38	American Board	78	Assemblies of God	12	Lutheran	125
Zulu Congregational	13	Anglican	56	American Board	7	American Board	92
Presbyterian	12	Lutheran	39	Lutheran	6	Anglican	60
African Congregational	11	Full Gospel	20	Jehovah's Witness	6	Pagan	38
Pagan	9	Zulu Baptist	18	Roman Catholic	5	Zulu Baptist	32
American Board	7	Zulu Congregational	14	Anglican	4	Zulu Congregational	27
Full Gospel	4	Pagan	7			Full Gospel	24
Ka Moya	3	Zionist	3			Presbyterian	12
						Assemblies of God	12
						African Congregational	11
						Jehovah's Witness	6
						Zionist	5
						Ka Moya	3
Total	221	Total	488	Total	76	Total	785

Note: The distribution of religious affiliation agrees with the distribution of religious affiliation of families (Appendix A. Family Schedule: 9.2 : p.191) as the distribution varies in the three areas; details for each area are shown. This variation depends on the activities of different missions operating in the areas.

22. AVERAGE DAILY DURATION OF SLEEP

Age in years	Average daily duration of sleep in hours								Total
	5	6	7	8	9	10	11	12	
0-4	- -	- -	3 2.4	4 3.2	15 12.1	56 45.2	41 33.1	5 4.0	124
5-9	- -	- -	- -	2 1.4	22 15.9	67 48.6	43 31.2	4 2.9	138
10-14	- -	- -	- -	6 8.0	15 20.0	39 52.0	15 20.0	- -	75
15-19	- -	2 3.0	2 3.0	16 23.9	21 31.3	21 31.3	5 7.5	- -	67
20-24	- -	6 10.2	1 1.7	17 28.8	15 25.4	19 32.2	1 1.7	- -	59
25-29	- -	6 11.1	3 5.6	21 38.9	10 18.5	14 25.9	- -	- -	54
30-44	- -	19 16.2	14 12.0	47 40.2	26 22.2	11 9.4	- -	- -	117
45-60	1 1.0	25 24.8	12 11.9	40 39.6	19 18.8	4 4.0	- -	- -	101
60 & Over	1 2.2	13 28.3	6 13.0	21 45.7	3 6.5	2 4.3	- -	- -	46

23. AVERAGE DAILY HOURS OF LEISURE

Average daily hours of leisure	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69
	No. %	No. %	No. %	No. %	No. %	No. %	No. %	No. %	No. %	No. %	No. %	No. %	No. %
1 hours	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	1 -	- -	- -
2 hours	- -	- -	- -	2 3.6	1 1.9	1 1.8	2 -	3 8.9	- -	3 -	2 -	- -	1 2.9
3 hours	1 0.8	2 2.8	18 25.7	13 23.6	10 18.9	13 23.6	7 -	6 17.6	8 15.4	8 -	2 -	2 -	2 5.7
4 hours	53 40.8	53 74.6	41 58.6	23 41.8	31 58.5	25 45.5	12 -	14 41.2	20 38.5	6 -	9 -	2 -	10 28.6
5 hours	6 4.6	6 8.5	6 8.6	6 10.9	4 7.6	7 12.7	4 -	7 20.6	10 19.2	2 -	4 -	2 -	3 8.6
6 hours	19 14.6	4 5.6	4 5.7	11 20.0	6 11.3	6 10.9	2 -	4 11.8	11 21.2	4 -	4 -	3 -	8 22.8
7 hours	1 0.8	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
8 hours	- -	1 1.4	- -	- -	- -	1 1.8	- -	- -	- -	- -	- -	- -	3 8.6
9 hours	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
10 hours	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
11 hours	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
12 hours	50 38.5	5 7.0	1 1.4	- -	1 1.9	2 3.6	- -	- -	3 5.8	- -	2 -	3 -	8 22.8
TOTAL	130	71	70	55	53	55	27	34	52	23	24	12	35

24. DEATHS DURING 1958

Age-Group	Cause	
0 - 4 years	Convulsions	1
	Malnutrition	1
30 - 34 years	Encephalitis	1
65 years and over	Chronic bronchitis and emphysema	1
	Encephalitis	1
	Congestive cardiac failure and malnutrition	1
	Total	6

APPENDIX A(c)

Questionnaires (1) and (2)

for

Family and Individual Schedules

respectively

FAMILY HEALTH SURVEY QUESTIONNAIRE 1

FAMILY SCHEDULE

Area ..... Country .....

(One form to be completed for each family, i.e. a group of persons living within the same household and conforming to the same pattern of family living, as for example feeding together and having the same household facilities available to them.)

- o O o -

1. Name of head of family .....
2. Code No. .....
3. Size .....
4. Address .....
   House No. Street
5. Usual occupation of head of family: .....
6. Family members: (Include in the following the names of all family members who are usual residents whether or not present at the first visit.) This list should be revised at each visit.

Names	Sex	Year of Birth	Relation-ship to head of family	Remarks
6.1				
6.2				
6.3				
6.4				
6.5				
6.6				
6.7				
6.8				
6.9				
6.10				

7. Housing and sanitation:

7.1 Ownership of premises: 1. self-owned; 2. rented .....

7.2 Annual rental value (in local currency) .....

7.3 Present value of premises as officially estimated (in local currency) .....

7.4 Total number of rooms (excluding kitchen) .....

7.5 Is there a separate kitchen? 1. yes; 2. no

7.6 Toilet facilites in house: 1. water closet (flush); 2. pail; 3. pit; 4. none .....

7.7 Disposal of human waste: 1. treated; 2. covered pit; 3. surface .....

7.8 Water: 1. taps inside the home; 2. tap available only outside; 3. protected well; 4. other (specify) .....

7.9 Heating facilities: 1. central heating; 2. stove or fire with chimney; 3. stove without chimney; 4. other (specify) .....

7.10 Type of fuel for cooking: 1. electricity; 2. gas; 3. coal; 4. oil; 5. wood; 6. peat; 7. other (specify) .....

7.11 Lighting: 1. electricity; 2. gas; 3. oil; 4. other (specify) .....

7.12(a) Bathing facilities: 1. bathtub or shower; 2. other (specify); 3. none .....

7.12(b) Hot water available: 1. yes; 2. no

7.13 Ventilation: is ventilation adequate as judged by prescribed standard? 1. yes; 2. no

7.14 Domestic pests: specify if any .....

7.15 Place for domestic animals, cattle etc. .....

(specify whether separate from the house or not; its floor, and method of manure disposal)

8. Economic Level

8.1 Total income last year
(ascertain from the tax office) .....

8.2 On the basis of the locally prevailing standards, is the family considered by the interviewer to be: 1. well off; 2. middle class; 3. poor .....

8.3 Is the family receiving financial assistance?
1. yes; 2. no (specify) .....

9. Participation of the family as a whole in:

9.1 Health insurance: 1. yes; 2. no (specify) .....

9.2 Religious activities: 1. yes; 2. no (specify) .....

10. Interviewer's assessment of the degree of co-operation in supplying information:

1. above average; 2. average; 3. below average; 4. very poor

11. Family Diet: To be asked from the housewife who is preparing or managing the food for the family. This information will have to be collected during each visit of the public health nurse throughout the year.

11.1 Foodstuffs eaten at meals during the last 24 hours:

	Break-fast	Lunch	Dinner	Other meal
Number of persons participating:				
Adults 15 yrs. & over ...				
Children under 15 yrs....				
Meat & fish (wt. in kilos)	.....	.....	.....	.....
Eggs (number)	.....	.....	.....	.....
Fresh vegetables (kilos)	.....	.....	.....	.....
Fresh fruit (kilos)	.....	.....	.....	.....
Bread (kilos)	.....	.....	.....	.....
Other cerials	.....	.....	.....	.....
Milk (cow's) (quantity)	.....	.....	.....	.....
Cheese (weight)	.....	.....	.....	.....
Others (specify)	.....	.....	.....	.....

11.1 (continued)	Break-fast	Lunch	Dinner	Other Meal
Alcoholic drinks (specify).....	.....	.....	.....	.....
Non-alcoholic drinks (specify)	.....	.....	.....	.....

11.2 Food taken outside family (specify by whom, kind and amount)

.....

11.3 Estimated cost of food recorded in 11.1 and 11.2

12. Dates of visits to family: 1st visit .....

2nd " .....

3rd " .....

4th " .....

5th " .....

6th " .....

7th " .....

FAMILY HEALTH SURVEY QUESTIONNAIRE 2

INDIVIDUAL SCHEDULE

Area ..... Country .....

(One form to be completed for each individual in the family.)

- o O o -

1. Name .....
2. Code No. (family) .....
3. Size (family) .....
4. Name of head of family .....
5. Sex .....
6. Address .....
7. Date of birth .....
8. Relationship to head of family: 1. head; 2. spouse; 3. brother/sister; 4. son/daughter; 5. in-law; 6. oth. adlt. rel., 7. parent; 8. grandchild; 9. other
9. Marital status: 1. single; 2. married; 3. widowed; 4. separated; 5. divorced; 6. not stated.
10. Gainful employment status: 1. employed; 2. partly employed; 3. not employed.

10.1 Duration of unemployment in months .....

11. Usual occupation or profession .....
12. Trade or industry .....
13. Educational status .....

(number of years in school, college or technical institution)

14. Disabling defects: (incapacitating from usual work, completely or partially)

14.1 Nature .....

14.2 Duration in years .....

14.3 Severity: 1. complete; 2. partial; 3. slight

14.4. Medical attention or rehabilitation service received from:

1. private practitioner; 2. local health service;
3. voluntary agency (specify) .....
4. others (specify) .....
5. none

15. Vaccination status: (if vaccinated, state within how many years)

1. Smallpox — not vacc., vacc. within 0-1 yr., 1-4 yrs., 5-9 yrs., 10 yrs. or over.
2. Diphtheria
3. Whooping Cough
4. Poliomyelitis
5. BCG

16. Use of alcohol: 1. none; 2. occasional or moderate; 3. excessive

17. Infant feeding (to be asked in the case of children)

17.1. Age in months at which breast feeding was discontinued .....

17.2 Age at which artificial* feeding was started

17.3 Age at which supplementary* feeding was started

17.4. Supplementary food used for infant feeding .....

18. Pregnancy Record:

18.1. Total number of previous pregnancies .....

18.2 Number of previous pregnancies terminating in:

1. stillbirths, i.e. late foetal deaths (28 weeks or more of pregnancy) .....
2. foetal deaths of less than 28 weeks' pregnancy .....
   1. induced .....
   2. spontaneous .....

18.3. Number of children still alive .....

19. Community participation:

participation of the individual in:

1. Public bodies
2. Health board
3. Voluntary health services
4. Social activities
5. Recreational clubs

---

* Artificial feeding is in substitution of mother's milk. Supplementary food is that given in addition to mother's milk or its substitutes.

20. Participation of the individual in insurance schemes against:

    20.1 Sickness

    20.2 Accidents

    20.3 Unemployment

    20.4 Invalidity

    20.5 Old age

    20.6 Maternity

    20.7 Death

21. Religious affiliation (specify) .....

22. Average daily duration of sleep (hours) .....

23. Average daily hours of leisure .....

24. Deaths during 1958

A P P E N D I X B

A SOCIO-MEDICAL EXPERIMENT IN IMPROVING THE DIETARY PATTERNS OF A LESS DEVELOPED COMMUNITY IN THE REPUBLIC OF SOUTH AFRICA

by

Stott, H.H., M.B., Ch.B. (Edin.)

Paper contributed in 1962 to
The United Nations Conference
on the Application of Science and Technology
for the Benefit of the Less Developed Areas
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FOR THE BENEFIT OF THE LESS DEVELOPED AREAS

Agenda Item: C.2

South Africa

A SOCIO-MEDICAL EXPERIMENT IN IMPROVING THE DIETARY PATTERNS OF A LESS DEVELOPED COMMUNITY IN THE REPUBLIC OF SOUTH AFRICA

By H.H. STOTT,
M.B., Ch.B. (Edin.)
Medical Officer-in-Charge,
Botha's Hill Health Centre,
Republic of South Africa

NOTES

1. Papers selected for inclusion in General Sessions will be available at the Conference in the following official languages of the United Nations: English, French, Russian and Spanish.

2. Papers selected for inclusion in Specialized Sessions will be available at the Conference in only one of the above official languages.

3. Summaries of all papers, as submitted by contributors, will be available at the Conference in the following official languages of the United Nations: English, French, Russian and Spanish.

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No. 757
C.2.2.

A SOCIO-MEDICAL EXPERIMENT IN IMPROVING THE DIETARY PATTERNS OF A LESS DEVELOPED COMMUNITY IN THE REPUBLIC OF SOUTH AFRICA.

H.H. Stott, M.B., Ch.B. (Edin.)
Medical Officer-in-Charge, Botha's Hill Health Centre,
Republic of South Africa.

1. INTRODUCTION: The need for a greater recognition of the importance of a broad approach to the complex problem of disease, especially amongst less developed people, where malnutrition predominates, presents a challenge not only to workers in medical and allied fields but to all sections of the community.

2. Malnutrition having its roots in a multiplicity of social, economic and environmental factors, it is obvious that a programme for its reduction or elimination must be planned on a socio-medical basis, leaving temporary measures of expediency, such as food distribution schemes, to be regarded in correct perspective, particularly when such measures may stultify individual human initiative and effort, the development of a sense of responsibility and the utilization of natural resources.

3. The paper describes a promotive health experiment with a medical foundation and social super-structure, operating, with improved nutrition as the ultimate objective, in a lower economic group living in the less developed area of Natal known as The Valley of a Thousand Hills. Here, and in surrounding areas with their high incidence of malnutrition due largely to poverty and ignorance with a background of deeply rooted restrictive customs, beliefs and habits, lay the ideal opportunity for the implementation of a scheme aiming at a wide and practical approach to the problem, closely relating cultural, economic and ecological factors to a medical service.

4. This socio-medical experiment has a foundation of two financially and administratively independent components:- viz. a medical service, the Botha's Hill Health Centre, supplied by the State; and The Valley Trust, a voluntary welfare organization. The latter was established specifically for the purpose of sponsoring the over-all scheme, and directing the development of complementary services and facilities around the medical service, with particular reference to improved nutrition.

5. The principles embodied in the aims of The Valley Trust insist that due regard must be given to the significance both of social, economic, educational and nutritional customs of the people, and of their social environment, as factors in the aetiology of disease. Methods best calculated to relate the project to the 'actual', also the 'felt', needs of the people must be devised, taking into account the manner and condition of their lives; using whatever is of value

in their traditional outlook and institutions. The co-operation and participation of the people must be secured, wherever practicable, in the services and facilities provided or sponsored, in order to foster the development of a sense of responsibility, and to extend the project at a pace consistent with the growth of the needs of the people, and of their capacity to profit thereby.

6. BACKGROUND: The area of the Valley in which the experiment is centered is approximately sixty square miles with an estimated population of 35,000.

7. A little more than half of this population is heathen, adhering strongly to primitive customs, habits and beliefs. The power and influence of the traditional 'medicine' men and women amongst them is very profound. Tremendous fear is engendered by their activities and they are mainly responsible for the survival of the many restrictive taboos, superstitions and conceptions of disease which negative much of the work of orthodox medical services and educationalists.

8. One gravel road follows a circuitious route through the Valley along which several trading stores, schools and churches are situated at intervals. Transport is limited to a few taxis, owned by more progressive members of the community. There are no villages; small groups of huts situated haphazardly on hillsides represent family units.

9. There are seven Primary Schools. A considerable number of parents, especially among the very backward, are vigorously opposed to formal education; regarding it as a disruptive force in the home. This attitude is a serious handicap to efforts which aim at overcoming their crippling ignorance; especially in this instance in relation to inculcating sound ideas on hygiene, health, nutrition and agriculture.

10. The jump, that was made by these people from a primitive, nomadic, pastoral economy to employment in industry, has tragically left them without an agricultural tradition. This is widely manifest today in the disastrous degree of neglect and misuse of soil in the areas which they occupy. This, in Natal, involves more than 33% of its total area. The people find that earning a living by selling their labour is easier than peasant farming, which has little appeal and no prestige value; and so greater dependence is placed on the trading store with its refined maize (mealie meal, mealie rice and samp) and other processed foods of little or no nutritive value, which are stocked because of better keeping qualities in transport and storage.

11. The deterioration of the soil is reflected in deterioration of plant life and malnutrition of animal and man. Food production is grossly insufficient for the maintenance of health and is confined to the wet summer months.

12. During 1956-7 two independent field investigations into the nutrition habits of people in The Valley of a Thousand Hills were carried out. The first by the Department of African Studies of the University of Natal (under the direction of the late Professor J.D. Krige and Dr. E. Krige) and the second by Mrs. E. White, Dietitian

to the State Department of Nutrition. Both studies revealed a dietary pattern of the same character as that existing amongst other less developed groups living under similar conditions elsewhere in South Africa, i.e. a high carbohydrate-low protein diet deficient in vitamins and other essential nutrients.

13. Throughout 1958 the dietary habits of 140 families in the Valley were included as part of a Family Health Survey for the World Health Organization[a]. Although these were a more enlightened group living in closer contact with the Health Centre and the Valley Trust, the results of the survey offered distressing confirmation of the conclusions of the previous surveys.

14. APPROACH AND DEVELOPMENT: Obviously then, if any permanency in the improvement of nutrition is to be hoped for in such circumstances, the main and immediate objective should be to foster an interst in the soil and food production. Thus the ground for nutritional education is being attempted at basic levels; at levels intelligible and acceptable to these people.

15. As the people under consideration are essentially individualists by nature, the problem called for an approach to the individual rather than at the community level. Traditional community institutions as such are unsuitable as channels of approach, having evolved through attitudes and conceptions far removed from motives of community welfare. Schools offer limited access partly by virtue of the persistence of prejudice against them by the older generation. Churches with their cleavages and isolated groups also fail to offer suitable channels of approach although Christians show greater individual response.

16. An underlying aggravating factor throughout is the lack of a sense of service amongst the less developed groups. Outside efforts and offers of assistance are therefore difficult for them to understand and readily arouse suspicion and resistance.

17. On 2nd January, 1951, the Botha's Hill Health Centre, the spearhead to the over-all socio-medical experiment, opened its doors to the community and in so doing met an urgent 'felt' and 'actual' need common to all sections throughout the area. A channel of approach was thus established that provided opportunities for closer contact, study and understanding of the people and their problems. The Out-Patient, Ante-Natal, Mother-and-Baby clinics and District Nursing Service were readily accepted and in due course five Sub-Centres at strategic points radiating from the Health Centre came into being.

18. Patients are kept out of hospital if it is within the bounds of reasonableness to keep them at home. The procedure is to give initial treatment at the Health Centre or Sub-Centres and then return the cases home where the District Nurses supervise and carry out the prescribed treatment. Experience shows that this is well

a. Stott, H.H., A Pilot Health Study World Health Organization, Geneva WHO/PHA/33 Botha's Hill, Natal, (1959).

accepted and provides ideal opportunities for nutrition and health education in the home setting.

19. The earliest agricultural foundations of the over-all experiment were laid at the time of the opening of the Health Centre, where it stood isolated, as a challenge, on a relatively bare infertile area of land alongside the main access road to the Valley. Due to the co-operative efforts of the Nursing Staff and Health Assistants the surroundings were rapidly transformed by well laid out, productive vegetable gardens. It is reasonable to assume that these early examples set by the medical staff stimulated interest in the minds of patients attending the Health Centre and of some of the thousands of passers by.

20. Fruit being virtually non-existent in the area, The Valley Trust established a nursery adjacent to the Health Centre, from which many fruit trees and sub-tropical fruit plants were distributed. Various tall growing grasses (e.g. Uganda and Napier Fodder) valuable as wind breaks and for checking soil erosion on bare wind-swept hill sides, were propagated and freely distributed.

21. By June, 1956, increasing public support for the Valley Trust made it possible to intensify and extend agricultural activities by the employment of a trained and experienced demonstrator. The following facilities have since been established and play a vital role in the nutrition education programme.

22. Demonstration Garden. Land as poor as the worst agricultural lands in the Valley was selected near the Health Centre. Rehabilitation of the soil is being carried out by methods and means available to all Valley dwellers, and not beyond their intelligence, available time and resources. Foodstuffs medically recommended and suitable to climate and local conditions are being grown and made popular. Vegetable seedlings are being made available for purchase at correct planting times. Various demonstrations on soil rehabilitation and care are given. Normally during the dry winter months, there is no cultivation whatsoever in the Valley, and green and freshly grown vegetables are virtually unobtainable. The demonstrator has pioneered a method of deep trenching which appears to be overcoming this problem, and makes it possible for those living in such conditions to grow vegetables for home consumption, and even for sale, throughout the year. The ultimate importance of this type of gardening, for less developed people, which uses no chemical fertilizers, only a minimum of animal manure (if any), and is virtually waterless, cannot at this stage be fully assessed. Valley dwellers are encouraged to establish small home vegetable gardens using modifications of this system according to the variations of the soil.

23. Home Produce Market. This is situated in the Demonstration Garden against the road opposite the Health Centre gate. It constitutes an incentive project to stimulate home production of surplus crops for sale, to widen economic opportunities, and to encourage people to visit the Demonstration Garden and see food grown there under conditions comparable to their own. Valley dwellers have the free use of all stalls with the exception of one on which is displayed a high standard of produce from the Demonstration Garden. Good quality seed is displayed, as is the case with seedlings, at correct sowing times.

24. Demonstration Home Garden. This project puts into practice, in a simple home unit, many of the principles and practices relative to agriculture, which The Valley Trust has been advocating through its numerous agencies during the past years. It consists of a simple dwelling on a fenced two-acre site alongside the road entering the Valley. The land has been roughly contoured off and an all-the-year-round vegetable garden established. The nearest water is a little over a quarter of a mile away, and has to be carried by hand. The whole unit is in full view of passers-by who have witnessed, during the past two years, the development of the garden, on a bare wind-swept hillside, by ways and means strictly within the resources of every Valley dweller. Against the road a small thatched covered stall displays, for sale, specimens of vegetables grown in the garden.

25. Poultry Keeping. The simplest and most economical methods of poultry keeping suitable for adoption by the Valley dwellers are being demonstrated and hardy strains of fowl able to withstand indifferent handling are being recommended. The deep litter system being used for the runs is particularly suitable for Valley conditions generally and ideal as a restorer of soil fertility.

26. Fencing Assistance. Up to 1959, in only rare instances was fencing seen, and then usually only around schools and trading stores. The recognised custom of allowing animals free range during winter months, and the prevalent attitude of mind that fencing one's property constitutes an anti-social act, presented difficult obstacles for men and women wishing to establish all-the-year-round gardens. Gardening without protective fencing being impossible The Valley Trust instituted in 1959 a scheme which enabled interested and progressive individuals of good character to receive fencing material of the best quality by means of a loan, free of interest and repayable over a long period. Apart from an initial delay due to a few incidents of intimidation to early participants and wilful damage, to the first fences, the scheme was adopted and soon proved a stimulus to others, many of whom began to acquire materials independently and establish gardens for the first time.

27. Family Garden Allotments. A scheme was introduced in 1959 whereby a limited number of families in the Valley could have small plots allotted to them on Valley Trust property for temporary garden cultivation under the supervision, control and direction of the demonstrator. Twenty-seven families are benefiting from this facility at present. Plots are allocated for a limited period only, in order that as many families as possible may benefit. Apart from extending knowledge of better soil use and food production this facility is providing valuable information on the attitudes, reactions and responses of the people.

28. Maize Grinding Mill. This adjoins the home produce market, and is designed to enable Valley dwellers to consume maize, their staple article of diet, with all nutrients intact: it also encourages its greater production.

29. Fish Culture. The purpose of this project which is in its development stage, is primarily to encourage the consumption of fresh water fish. It is a practical means of meeting the serious lack of dietary protein and other essential nutrients absent where maize forms the staple article of diet. Countless marshy areas with

an abundance of clay offer ideal opportunities for the construction of simple small family ponds, using local resources; in which indigenous bream can be propagated. The feeding of the fish, which are herbiverous, presents no problem. Such a development has additional advantages in that it encourages a sense of responsibility towards soil and water conservation.

30. RESPONSE: That the confidence and the active interest of the people is being obtained may be assumed from the following:- individual case records now exceed 75,000 with total attendances well in advance of 300,000 (these figures include patients from surrounding areas); accommodation for three of the Sub-Centres has been voluntarily supplied, rent free, by individuals in the communities concerned; indigenous 'medicine' men and women, formerly opposed to the medical service, have for some years now openly attended clinics for treatment and do not restrain their clients from attending; The Valley Trust agricultural demonstrator receives more calls for assistance than he is able to meet; the demand for Valley Trust vegetable seedlings increases annually; records of maize ground in the May, June, July period show steady annual increases: 1959=11,220lbs: 1960=13,872lbs: 1961=18,833lbs: 1962=32,381lbs.; there has been phenomenal increase in the cultivation of beans throughout the area in recent years coinciding with the intensive propaganda of the Health Centre and The Valley Trust for a greater use of this protein food[b]; as a result of increasing demand from the people, local traders are now stocking a variety of protective foods such as fresh vegetables, fruit, milk and brown bread; a questionaire to the traders in July, 1962, reveals that sales of these and other protective foods show a recent "marked increase"; since 1957, twenty fresh produce hawkers and twelve fresh produce stall-holders have sprung into activity in the Valley. The Department of African Studies, University of Natal[c], during December, 1961 and January, 1962, investigated a random sample of 37 gardens, taken from a total of 84, in a given area of the Valley. Relevant points of interest are that:- 43% had begun in the period 1960 - 1962; all families eat the vegetables themselves, 54% of which sell as well; 90% had recently planted fruit trees; all except two, of the families eat fish if available; brown bread is also more popular than white. Reasons given for starting gardens included:- "so that the children may have green vegetables ; because it is necessary for our health"; "to eat green vegetables in winter".

31. COMMENTS: That protective foods to supplement dietaries can be produced in the area throughout the year with existing local resources has been established. The extent to which this is possible has not yet been assessed. The indications are however, that there is sufficient potential for food production to make a material contribution to the health of the people provided their interest and initiative can be aroused. While there is evidence to indicate a significant increase in the consumption of protective foods as a result of the over-all socio-medical experiment, this change has been too recent to have been the subject of a complete dietary survey.

b. Stott, H.H., The Valley Trust (Annual Report), Page 10, Botha's Hill, Natal, (1961).

c. Preliminary Report on Mysuwa and Qudi Gardens by research students under supervision of Professor E.J. Krige, M. Department of African Studies, University of Natal (1961-1962).

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A P P E N D I X C

"THE VALLEY TRUST"

A symposium by the Senior Tutor, Mrs. S. Towert and nurses of Edendale Hospital, Natal with introduction by Dr. H.H. Stott (1967)

"South African Nursing Journal"
Vol. XXXIV No. 7 pp. 23-27

THE VALLEY TRUST

The following symposium is offered to readers of the "South African Nursing Journal" by a panel of people all directly concerned with eradication of malnutrition and the teaching of positive health.

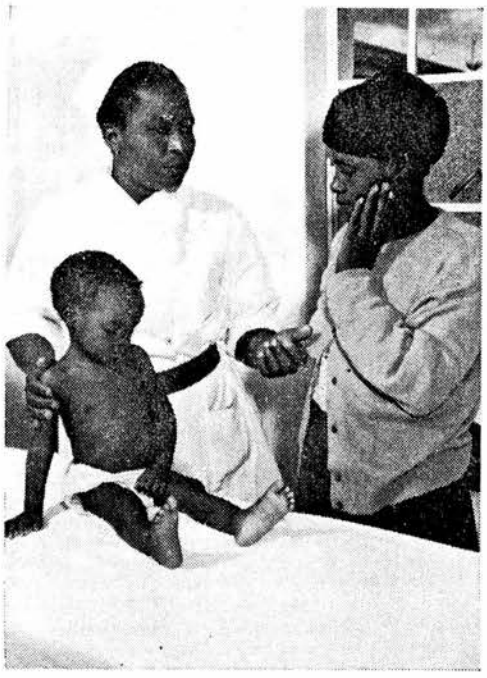
Introduction by
The Chairman of The Valley Trust—
DR. H. H. STOTT

". . . . THERE is clear and convincing evidence of the association between faulty diet and ill health. The ill effects of not eating enough of the right kind of food are manifold. In the first place, malnutrition leads to impaired vigour and lowered vitality so that its victims cannot fully play their part as active and useful citizens. Secondly, the incidence of disease in general and the mortality rate among infants, young children, women in the child-bearing period, and indeed among all age groups, are invariably higher in ill-fed than in well-fed populations. Recovery from disease is more prolonged where diet is defective. Countries which consume the best diets have the lowest rates of mortality and the highest expectation of life. Thirdly, there are various common diseases such as tuberculosis, which are directly associated with lowered resistance caused by malnutrition. Finally, there are a number of food-deficiency diseases, i.e., diseases directly due to lack of specific nutrients in the diet, which are present in various parts of the world, and lead to much unnecessary suffering since they are preventable but not prevented . . . . This quotation is from the report of the United Nations Conference on "Problems of Food and Agriculture" held at Hot Springs in 1943.

In spite of the greater knowledge of the essential nutritional needs of man that has been acquired since this conference of world experts 24 years ago, there still remains an extremely wide and significant gap between knowledge and practice.

Concealed Malnutrition

It is of paramount importance to appreciate and keep in mind the danger of concealed malnutrition which has been likened to the iceberg with 9/10ths lying unobserved beneath the surface. This is of vastly greater practical importance than the more obvious deficiency diseases. In his Cantor lectures, the late Sir Robert McCarrison, formerly Director of Research and Nutrition, India, said of concealed malnutrition it leads ". . . . surely, though slowly, to a lowering of vital processes, to impaired resistance to microbic and other pathogenic agents of disease and to the development of maladies of many kinds".



Patients are kept out of hospital if it is within the bounds of reasonableness to keep them at home. Initial treatment is given at the Health Centre and district sub-centres, and the patients are returned to their homes where they are kept under the supervision of the Health Centre's District Nursing Service. In this way, much valuable nutrition and health education can be given in the home environment, where it has meaning and purpose.

It is authoritatively stated today that at least two-thirds of the world population suffers from malnutrition and that the rate of food production is falling far behind the rate of increase in the world's population. Here in Natal one-third of the Province is allocated to Bantu Reserves. In these less developed areas the absence of an agricultural tradition is only too evident. This is widely manifest in the disastrous degree of neglect and misuse of soil. The deterioration of soil is reflected in the deterioration of plant life and malnutrition of animal and man. Food production is grossly insufficient for the maintenance of health and so greater dependence is being placed on the trading store with its refined maize (mealie meal, mealie rice, samp) and other processed foods of little or no nutritive value such as cake flour and commercial sugar. Added to this are bad cooking practices, restrictive customs, habits and beliefs, to mention only some of the problems and interrelated factors in which malnutrition and many diseases have their roots.

A Major Problem

A major problem is the Bantu attitude to illness. The belief that disease is either the work of evil spirits, the anger of ancestors or the malice of

enemies, is widely prevalent. With this background of ignorance and superstition it is not surprising that the average Bantu selects his food for no other considerations than for filling qualities and palatability. When illness follows, the trend is to expect the medicine bottle and injections, or the administration of traditional medicine men and women, to effect the cure without any personal effort. Allied to this is the fatalism which enables them to accept death with resignation as something beyond their control.

This, then, is a brief glimpse into the background of scores of less developed people daily crowding rural and urban clinics, consulting rooms, outpatient departments and costly hospital beds. Their illnesses are mainly the products of ignorance, and after costly and disorganising absences from home, they return little the wiser, to the same way of life and conditions from whence they came.

The implications are clear. There is a compelling need for a broad educative approach to the complex problem of disease, particularly under these circumstances. This **The Valley Trust** is attempting in the socio-medical experiment that it is conducting and sponsoring in the Valley of a Thousand Hills at Botha's Hill, Natal.

The Botha's Hill Health Centre, under the State Health Department, provides the medical component of the experiment; all other activities are supplied by The Valley Trust. Among these are a cooking demonstration unit, demonstration vegetable gardens and an agricultural service.

A nurse has a unique opportunity of establishing a close, if not intimate, relationship with the patient who, conditioned by anxiety, possibly fear of the illness, is more receptive to advice. Thus in the overall programme she plays a vital role as a health educator and she gives particular attention to the improvement of dietary habits. In the medical context this is carried out in conjunction with the doctor in the consulting room, in the ante-natal and mother and baby clinics, the treatment rooms, and, more ideally where relatives and friends may benefit, during home visiting. In broader context, the nurse becomes the valuable link between patient and the non-medical ancillary services available for the assistance of the interested patient.

From the Senior Tutor, Edendale Hospital, Mrs. S. Towert

Every student nurse at Edendale Hospital in general and midwifery training, visits The Valley Trust as part of her education in preparing her to take her place in her community; to learn what can be done to improve nutrition in a tribal society and to emphasize her role as a health educator. The educative value of these visits is understood and deeply appreciated by our students, and, from the teaching point of view, they are invaluable as a practical demonstration of what can be done towards enlightenment of the less privileged members of their society, in improving knowledge of nutrition and the preparation of food, by showing as well as telling!

Our programme of teaching nutrition commences at the beginning of the nurse's training, with lectures on elementary dietetics and practical classes in invalid cookery. Nutrition and the preparation of basic diets for our various cultural groups is taught by a domestic science teacher before the Preliminary examination is written, and the visit to The Valley Trust is undertaken during the Preliminary Block. Nutrition is revised and diet therapy lectures and the practical preparation of special diets is undertaken within the third year of training, by a qualified dietitian. The practical application of this knowledge is given in periods spent in the wards, on their study days, when students feed, and give total nursing care to patients who are very ill and have been ordered special diets. These periods of practical nursing are supervised by members of the training school staff and clinical teaching sisters, and are undertaken as clinical bedside teaching periods.

From the Midwifery Teaching Sister — Sister Nzimande

During their final midwifery course, student midwives visit The Valley Trust and this visit serves as a useful link with the community they are going to serve on completion of their midwifery training.

Midwives attend pregnant mothers from the commencement of pregnancy and are able to give advice on proper nutrition, teaching them that a healthy mother can hope to produce a healthy baby. Talks on nutrition of mother and child, and on preparation of baby feeds, are included in a short series of simple talks given by the student midwives to the mothers attending the ante-natal clinics.

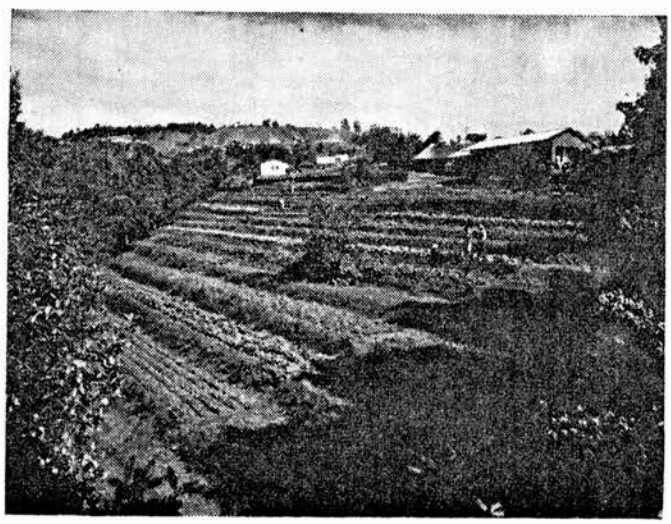
Of particular interest to midwifery students in the visit to The Valley Trust are the practical demonstrations of simple methods of cultivation and soil enrichment, and cooking in a three-legged pot (a traditional method widely used) without destroying the food value of the ingredients. Another valuable demonstration is the use of the mill for producing wholemeal which is so much more nutritious than the refined meal bought in shops.

The talk given to student midwives by the chairman, Dr. Stott, incorporates infant feeding and the demonstrator, Mr. Mazibuko, emphasizes the value of nature's gifts in home-grown fresh vegetables to mothers and their children.

Midwives travel widely in their community and, by reason of their specialised knowledge, can give advice and guidance in the care of the infant and the upbringing of the child to the age of five years, thus making a valuable contribution to the prevention of disease and the promotion of health. They

(Continued on page 26)

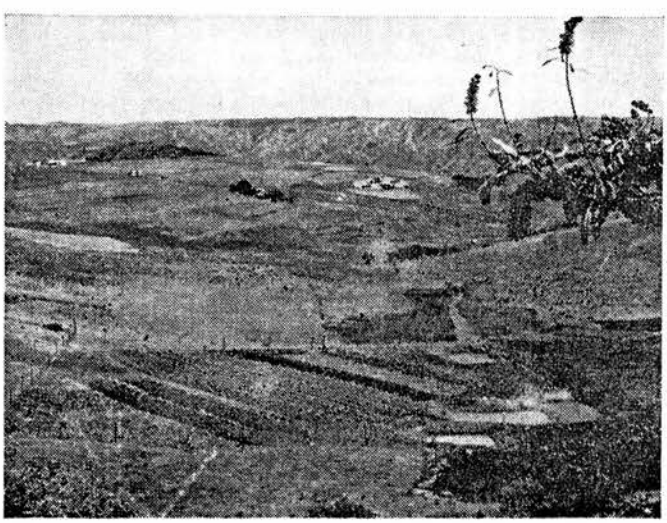
THE VALLEY TRUST



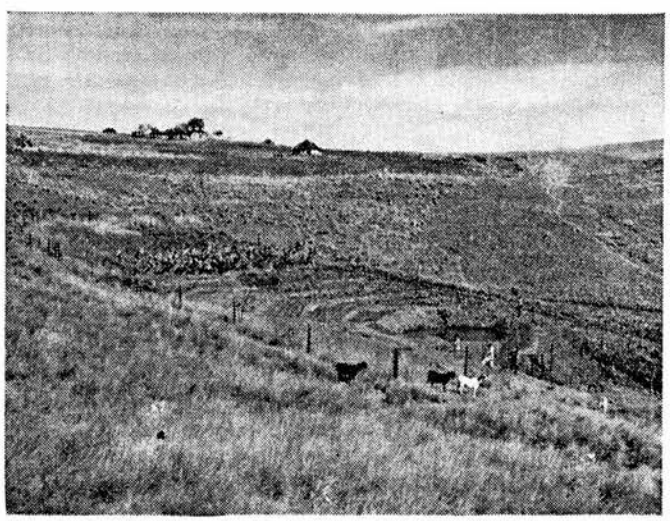
The demonstration garden, which lies adjacent to the Health Centre, was the first major Valley Trust project to be launched. Here, on what was a barren hillside, has evolved a highly productive vegetable garden, using methods and means available to all Valley dwellers and within their ability. This achievement has been witnessed by the many thousands attending the Health Centre throughout the years.

Foodstuffs medically recommended and suitable to climatic and local conditions are being grown and popularised. Free individual instruction and advice are available from The Valley Trust Agricultural Demonstrator both here and in the homes.

The functionally related Food Preparation Unit, Market and Mill can be seen overlooking the demonstration garden.



The Food Preparation Unit encourages the use of foods of good nutritional value that are within the abilities of all members of the community to grow. Methods of preparation that cause minimal damage to essential nutrients are demonstrated, using only the simplest traditional utensils and facilities.



An oasis amid misuse and neglect.

A garden laid out by The Valley Trust to demonstrate the potential for water conservation and food production; and for the immediate benefit of a group of needy families.

all feel they have gained considerable insight in these fields after their visit to The Valley Trust.

From a Student Nurse in General Training—Nurse Florina Ramohanoe

The Valley Trust is a socio-medical experiment which was founded by Dr. Stott, his aim being to combat the malnutrition in our people.

He got this idea of establishing The Valley Trust whilst a visiting doctor to King Edward VIII Hospital, Durban. He saw a lot of mothers bringing their miserable looking Kwashiorkor babies and he was very moved. It was no use treating these children and making them gay-looking, healthy children only for them to come back after three months suffering from the same Kwashiorkor.

He went into the reserves and chose the Valley of a Thousand Hills. He taught the people there that the food they ate made them what they are. If you eat healthy, natural food you will be a healthy person. You do not need to take out money and buy this healthy food, nature has provided you with all these foods; all you have to do is use your hands. The fathers are taught how to enrich their fields without using a cent. Mothers are taught how to cook these foods without destroying their nutritive value, what food to give their children and that they must start feeding their children whilst in the womb so that they may have a good foundation. An unhealthy baby is susceptible to all diseases and the health of the baby may be obtained from what the pregnant mother eats.

Dr. Stott has an agricultural assistant who teaches these people how to grow their crops and fertilise their soil in order to yield a hundredfold without buying expensive fertilisers. They make their own soil fertile by using a natural way.

The Trench System

The "trench system" is introduced. A hole is dug in the ground. In this hole layers of soil alternate with layers of grass. While the grass is still decomposing, lettuce and cabbages are grown so as not to leave the field bare, their roots being the only ones that are able to withstand the heat produced by decomposing grass. After the yield of lettuce is taken from the ground, leguminous plants are planted, such as peas, beans, etc. They have the power of absorbing nitrogen from the air and storing it in the ground, thus rendering their fields more fertile, whilst they eat the beans and peas using them as a substitute for meat for their protein in the diet.

Those who have chickens are taught how to make manure for their fields from the excreta of the chickens. Veld grass is laid down in the fowl run and every day crumbs that are left when bread is cut are mixed with grain and thrown in the fowl run. This causes the chickens to scratch in the grass, thus mixing the grass and the excreta. After six months this is swept out of the fowl run and used as fertiliser.

All the rubbish in the yard, such as papers and leaves, is collected and put in a big hole which has been dug across a furrow made by running water. This hole has a threefold function. It helps to keep the yard clean; it prevents soil erosion and it forms a fertiliser.

Dams, which serve a double purpose, are built. They supply water for both fields and animals. Fish are introduced in these dams which will, in turn, supply people with protein.

With all these natural ways of fertilisation Dr. Stott has managed to help our people to grow good crops, eat healthy food, and has thus brought down the percentage of Kwashiorkor and established a healthy race.

Dual-Purpose Mill

A mill is established which serves a dual purpose, firstly people from this valley are able to get their maize milled without undergoing the sifting process where most of the nutritive value is lost. Secondly, the agriculturist is able to see which reserve has the least yield of crops, and thus the following year he will concentrate on this reserve and try to improve their method of agriculture and to teach them to better their agricultural methods.

Women are taught how to cook their food without destroying the food value. To be more practical three-legged pots and ground fire are used. This teaches them that food cooked in a pot on the stove has the same nutritive value as the food cooked in the three-legged pot, something that they have and are using every day.

From Dr. Stott's lecture I have learned that I, as a nurse, am not only supposed to give my patient treatment and to end there. I should try to prevent him from coming back to the hospital after a few months by teaching him the correct diet he must eat.

From the daily diet the patient gets in hospital, I point out to him the different kinds of food found in his diet, the use of every food found in his diet and that there are other substitutes for meat as this is expensive, and that he need not buy but take from his small garden, at home, food such as beans, peas and the fish which he thinks is the snake.

He must be given examples that he can see, e.g., the doctors and nurses are people like himself, they live just like him, the only difference being that they are seldom sick. Why? Because they eat the right type of food, not because they drink medicines and get injections every day. He can also be healthy like them if he eats the correct food. Porridge with green leaves (Mfino), pumpkin and milk is a perfect diet. He need not go for the expensive, artificial foods which have no nutritive value but for the vegetables and fruits supplied to him by nature. I tell him that the best way of preventing sickness is eating the correct diet. He can maintain this by concentrating on the food God has given him through nature.

FROM A STUDENT MIDWIFE

—Nurse G. Mohapi

The bus wound its way safely into the Valley of a Thousand Hills. All the passengers were captivated by the magnificent scenery — sister tutors, medical students, staff nurses and student midwives.

In his inspiring address Dr. Stott, the Founder and Chairman of The Valley Trust, drove home the point that medicine and treatment without proper and adequate diet were next to useless. The aims of The Valley Trust incorporate teaching the people to build strong bodies by proper nutrition and, hence to stave off illness. As nurses we are painfully aware of the scourge of malnutrition.

To support his talk, Dr. Stott arranged a practical demonstration by the agricultural demonstrator, Mr. Mazibuko — a man well versed in the art of soil husbandry and also in the psychological approach to his people.

We were shown all the amenities mentioned above and were impressed with the fact that the mind is catered for as well as the body by a library run by an African library committee.

The enlightenment we received from this visit was simultaneously a challenge — a challenge to all student midwives who will soon be dealing with malnourished expectant mothers at home, in clinics or in hospital.

We realised the importance of guiding people on the choice of foods and the proper methods of cooking and growing their own fruit and vegetables, and we learnt a great deal by seeing how this was being done at The Valley Trust.

A P P E N D I X D

"THE VALLEY TRUST: A SOCIO-MEDICAL EXPERIMENT"

Stott, H.H., M.B., Ch.B. (Edin.)

"South African Medical Journal"
Vol. 42, 26 October 1968, pp. 1115-1118

Reprinted from the "S.A. Medical Journal", Vol. 42, 26 October 1968, pages 1115 - 1118

THE VALLEY TRUST: A SOCIO-MEDICAL EXPERIMENT

H. H. STOTT, M.B., CH.B. (EDIN.), *Chairman, The Valley Trust, Botha's Hill, Natal*

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THE VALLEY TRUST: A SOCIO-MEDICAL EXPERIMENT*

H. H. STOTT, M.B., CH.B. (EDIN.), *Chairman, The Valley Trust, Botha's Hill, Natal*

The Valley of a Thousand Hills is an area renowned for its wild beauty. It lies midway between the two major industrial centres of Natal, Durban and Pietermaritzburg, and is part of a vast Zulu Reserve. From the countless kraals scattered throughout its hills, thousands of Zulus seek employment as migrant labourers in these and other areas as far afield as the Witwatersrand. More than half of the population adhere strongly to primitive customs, habits and beliefs. The power and influence of the traditional medicine men and women among them is very profound and shows no sign of decreasing. Recent surveys in the Valley have shown that, owing largely to the increasing frustration, anxiety and insecurity created by changing social and economic conditions, the number of diviners or witchdoctors (*isangoma*) has increased in recent years.[1] Their activities are to a large extent responsible for the survival of the many taboos, superstitions and conceptions of disease which negate much of the work of orthodox medical services and educationalists, to a degree not generally realized.

The jump that was made from an economy based on pastoralism and a primitive shifting cultivation to employment in industry has, tragically, left the Bantu without a sound agricultural tradition. This is widely manifest in the disastrous degree of neglect and misuse of soil in the areas which they occupy, which in Natal involves more than 33% of its total area. The deterioration of the soil is reflected in deterioration of plant life and contributes in no small degree to malnutrition in animal and man. Food production in the Valley of a Thousand Hills is grossly insufficient, and is confined to the wet summer months. Thus great dependence is placed on the trading store with its supplies of refined maize products (sifted mealie meal, mealie rice and samp) and other processed foods such as cake flour, white bread and commercial sugar, all of little or no nutritive value.[2]

Field investigations in the Valley have confirmed that the diet of the people is grossly ill-balanced and follows closely the dietary patterns found among other underdeveloped communities: a diet high in refined carbohydrate and low in protein, vitamin and mineral content.[3] As would be expected, such conditions as kwashiorkor and pellagra, and other manifestations of malnutrition, are commonly seen. But not so readily perceived are the more serious 'hidden' insidious effects of chronic malnutrition which lead 'surely, though slowly, to a lowering of vital processes, to impaired resistance, to microbic and other pathogenic agents of disease and to the development of maladies of many kinds', to use the words of the late Sir Robert McCarrison.[4]

The belief that disease is caused either by the anger of ancestors or the malice of enemies is still far too widely prevalent to permit the average Bantu, whether rural or urban, to accept the fact that he should select his food for considerations other than for its filling qualities, palatability and cost. When illness follows, the tendency is to expect the medicine bottle or injection or the ministrations of traditional medicine men and women to effect a rapid cure without any personal effort on the part of the patient. Allied to this is the fatalism which enables them to accept the death of a child from some preventable condition with resignation as something beyond their control. And so to compensate for a high child mortality a high propagation rate persists. This, then, is the background of many thousands who daily crowd rural and urban clinics and fill costly hospital beds, only to return none the wiser after treatment, to the same way of life and conditions whence they came.

APPROACH TO THE PROBLEM AND CHOICE OF SITE FOR A SOCIO-MEDICAL SCHEME

Malnutrition has its roots in a multiplicity of social, economic and environmental factors. Any programme for its reduction or elimination, therefore, requires to be planned on a long-term socio-medical basis. Temporary measures of expediency, such as food distribution schemes, are mere palliatives which may stultify individual human initiative and effort and the care and utilization of natural resources. The Reserves are naturally the cultural nurseries of the Bantu. Here all customs and traditions have their origin and frequently maintain their powerful hold, regardless of the environment in which the individual subsequently lives. It seems, therefore, that whatever steps are taken to combat this problem of malnutrition and the diseases deriving therefrom, the major attack should be directed to the majority living in the rural areas. With such facts as these in mind, the Valley of a Thousand Hills was chosen as a suitable area for a promotive health experiment, aiming at a wide and practical approach to the problem, and closely relating cultural, economic and ecological factors to a medical service.

THE VALLEY TRUST AND BOTHA'S HILL HEALTH CENTRE

As the central organization to promote an over-all socio-medical experiment, The Valley Trust was formed. It is a registered welfare organization and is entirely dependent upon voluntary help and donations. The Valley Trust property of approximately 100 acres lies adjacent to the Zulu Reserve and alongside the main access road. Here are centred the medical, agricultural, cultural, religious and recreational components of the scheme. For purposes of this paper, only the medical and agricultural aspects are touched on.

The backbone of this over-all socio-medical experiment is the medical service provided by the Botha's Hill Health Centre, which was established with the cooperation of the State Health Department on 2 January 1951. This met an urgent need felt by all sections throughout the area.[5] By the end of 1951 total attendances had exceeded 17,000. Thus a channel of approach to the community had been established and provided opportunities for closer contact, study and understanding of the people and their problems. The outpatient, antenatal, mother and baby clinics and district nursing service were readily accepted, and in due

*Paper presented at the 46th South African Medical Congress (M.A.S.A.), Durban, July 1967.

course five sub-centres at strategic points radiating from the Health Centre were developed at community request. Today, over 16½ years later, the number of individuals who are attending the Health Centre and its sub-centres, now covering an area of about 100 square miles, has increased from close on 5,000 in 1951 (with a total attendance of 17,000) to 128,000 with total visits exceeding 460,000.[6]

An important point in policy is that patients should be kept out of hospital if reasonably possible, greater reliance being placed on the Health Centre, sub-centres and home visiting nurses. Many cases, for instance, of tuberculosis, heart failure, pneumonia, burns and malnutrition normally hospitalized can be satisfactorily treated in the home environment. Over the past 3 years, during which the average annual attendance has been 31,050, the average annual admissions to urban hospitals have only been 195, i.e. 0·64%. It can readily be seen that one of the consequences of such a policy is an enormous saving in public expenditure.

The Health Centre offers ideal opportunities for nutrition and health education in the home setting. Under these circumstances directives relative to feeding habits, food handling and preparation, personal and environmental hygiene, immunizations, tracing of tuberculosis contacts, and so forth, have meaning and purpose and so are more likely to be intelligently accepted. In the over-all experiment the nurse, with her specialized training and practical experience, plays a key role. Her respected position among the people affords unique opportunities for health education particularly in regard to nutrition, whether in the outpatient clinics, district sub-centres, roadside treatment points, or, most important of all, in the home environment.

MEANS BY WHICH NUTRITION IS BEING IMPROVED

Food Preparation Unit

To consolidate the teachings of doctors and nurses in the Health Centre, on feeding habits, a food preparation unit was established in 1963 by The Valley Trust. This unit encourages the use of foods of good nutritional value that are within the ability of all members of the community to grow. Methods of preparation that cause minimal damage to essential nutrients are demonstrated, using only the simplest traditional utensils and facilities. Patients are referred from the Health Centre and the adjacent Botha's Hill TB Settlement

Maize-Grinding Mill

To enable Valley dwellers to consume maize, their staple article of diet, with all nutrients intact, and to encourage increased production, a maize-grinding mill has been set up. The use of whole-grain in preference to refined mealie meal ensures per unit of weight: 3·3% increase in protein; 40% increase in fat; 25% increase in calcium; 19% increase in phosphorus; 31% increase in iron; 317% increase in thiamin; 300% increase in riboflavin; and 100% increase in niacin.[7]

Increase in Production of Foods

Improvement in agriculture and the production of food forms an important aspect of the whole socio-medical scheme. The population is, however, too dense for a subsistence economy to be possible any longer. For this reason The Valley Trust has, from the outset, concentrated on encouraging vegetable gardening to supply protective foods. By 1956 public support for The Valley Trust had made it possible to employ a full-time trained agricultural demonstrator and field staff. Agricultural activities have since been greatly intensified and the following facilities, which play a vital role in the long-term nutrition education programme, have been established:

(a) *Demonstration Garden*. Land as poor as the worst agricultural lands in the Valley was selected near the Health Centre. Here rehabilitation of the soil is being carried out by methods and means available to all Valley dwellers and not beyond their intelligence, available time and resources. Foodstuffs medically recommended and suitable to climate and local conditions are being grown and made popular. Various demonstrations of soil rehabilitation and care are given. Normally during the dry winter months, there is no cultivation whatsoever in the Valley, and green and freshly grown vegetables are unobtainable. The agricultural demonstrator has introduced a method of deep trenching which appears to be overcoming this problem and makes it possible for those living in such conditions to grow vegetables for home consumption throughout the year. Vegetable seedlings are being made available from The Valley Trust gardens at correct planting times.

(b) *'Rotating Pool'*. Even in small-scale peasant farming among a very poor group, little can be achieved without a certain amount of capital or the means of raising it for tools or for initial outlay. To meet this basic need The Valley Trust, in 1959, established a Rotating Pool to enable individuals of good character to acquire materials on an interest-free, long-term repayment basis. This has been used primarily for fencing, which is essential for the protection of gardens and fish ponds. The scope of this pool has recently been widened to include implements and, in special cases, labour.

(c) *Home Produce Market*. This is situated in the main demonstration garden and constitutes an incentive project

Fig. 1. Bantu medicine men and women formerly opposed to the State medical service, now openly attend clinics for treatment.

to stimulate home production of surplus crops for sale, to widen economic opportunities, and to encourage people to visit the demonstration gardens and see vegetables grown there under conditions comparable with their own.

Fig. 2. Treatment does not end with a bottle of medicine.

Other agricultural activities of The Valley Trust include:

(*i*) home visiting in response to requests for advice and guidance in vegetable gardening matters, fencing, crop cultivation, etc.;

(*ii*) active encouragement of school vegetable gardens (the agricultural demonstrator pays regular visits to 28 schools), and employment of children on agricultural projects during school holidays (85 children were employed during vacations in 1966 at a cost of R217);

(*iii*) the maintenance of demonstration vegetable gardens at sub-centres;

(*iv*) the popularizing of the deep litter system for poultry to step up protein production and for the valuable compost which results;

(*v*) the initial layout and construction of small vegetable gardens as a measure of relief to genuinely destitute families and those handicapped by tuberculosis.

Fish Culture

The purpose of this project is to encourage the culture of fresh-water fish as a practical means of meeting the serious lack of protein in the Bantu diet, particularly in the case of infants and children. In view of the alleged dislike of fish by the Zulus, careful investigations were made before the launching of this experiment in 1959. Observation and investigations over the preceding 5 years had shown that a sufficient number of the community would eat fish, if available and suitably prepared. Construction of small earth fish ponds with their protective fences is a simple and inexpensive matter and can be carried out by the Bantu themselves. The Reserve abounds in neglected 'sponges' ideal for the purpose. Buried perforated drums at the edge of ponds provide uncontaminated seepage water for drinking and domestic purposes. Thus the ponds serve a triple valuable purpose: fish breeding, water conservation and a source of clean domestic water.

PROGRESS AND ACHIEVEMENTS

An indication of the progress that has been made and the attitude and response of the community to the services and teaching of the Health Centre and Valley Trust may be gained from the following:

Cooperation from the Community

Accommodation for 4 of the 5 sub-centres has been supplied by the Bantu themselves, either rent-free or at nominal rental.

Changing Attitude of the Witchdoctors

The *isangoma*, indigenous medicine men and women, who were formerly opposed to the medical service, have, for over 10 years now, not only openly attended the clinics for treatment, but have brought or sent patients. Three of the best recently-established vegetable gardens are owned by leading *isangoma*. All three were laid out under Valley Trust supervision. An *isangoma* who has attended the Health Centre for many years and who has taken advantage of The Valley Trust facilities, now includes vegetable gardening as part of the training for her pupils. The importance of 'strength-giving food' is also stressed in her training course for witchdoctors!

Response to the Gardening Campaign

There are today over 300 home vegetable gardens in the Valley.

In an investigation in 1962 carried out by the African Studies Department of the University of Natal, it was found that the families of all who had made gardens ate the vegetables themselves, 54% of them sold vegetables as well and 90% had recently planted fruit trees. Reasons given for starting gardens included 'so that the children may have green vegetables', 'because it is necessary for our health to eat green vegetables in winter'.[8]

The Valley Trust agricultural section is unable to keep up with requests from Valley dwellers for advice and assistance.

Requests for vegetable seedlings increase steadily.

In recent years there has been a phenomenal increase in the cultivation of beans throughout the area, coinciding with the intensive propaganda of the Health Centre and The Valley Trust for the greater use of this protein food.

Produce Stalls in the Reserve

In 1957 The Valley Trust first established the fresh produce market. Within a few years this was followed by a succession of small produce stalls which sprang up along the roadside in the Valley, near home vegetable gardens.

Consumption of Home-grown, Whole-grain (Unsifted) Mealie Meal

The maize-grinding mill is an increasingly popular project. Maize brought for milling in small 20 - 30-lb. amounts increased from 11,220 lb. in 1959 to 47,803 lb. in 1966.

Fish Dams for Food and Water-supply

Five years ago there was not a single pond in the Re-

serve; today, of the 73 fish ponds in existence, 32 have been built without financial assistance from The Valley Trust.

Responsible Repayment of Loans

The cooperation and sense of responsibility shown by almost all those assisted from the Rotating Pool have made it possible for an initial capital sum of only R500, increased slowly after 6 years to R2,000, to be used many times over in small individual loans averaging R40, to a total value of R5,988. The total amount repaid to date is R3,271, with bad debts totalling only R169. The scheme has been in operation for 7 years.

SUMMARY AND COMMENTS

An outline has been given of a promotive health experiment with a medical foundation and social superstructure, operating, with improved nutrition as the ultimate objective, in a lower-income group living in the less developed area of Natal known as the Valley of a Thousand Hills. Here, and in surrounding areas with their high incidence of malnutrition due largely to poverty and ignorance with a background of deeply rooted restrictive customs, beliefs and habits, the opportunity was taken to implement a scheme aiming at a wide and practical approach to such a problem, closely relating cultural, economic and ecological factors to a medical service.

In the opinion of the doctors and nurses at the Health Centre, the incidence of malnutrition has decreased markedly in the areas surrounding the Health Centre and Valley Trust, its incidence increasing with the distance from the Health Centre. This seems to be supported by a statistical investigation based on Health Centre files that was attempted in 1962.[9] According to this, the percentage of patients suffering from malnutrition was 9 - 10% of all patients in the case of Nyuswa and Qadi people, among whom the Health Centre began its work, but rose to as high as 33½ and 50% respectively in the Fredville and Hammarsdale areas that had more recently been brought into the sphere of Health Centre-Valley Trust activities.

In the light of all the facts that have been set out above, it would appear that hospitalization could be considerably reduced and thousands of rand now expended on hospitalization could be used more effectively, and to better purpose, from both the medical and health-educational point of view, by providing promotive health services of the kind outlined above in Bantu Reserves throughout South Africa.

REFERENCES

1. Van Nieuwenhuijsen, J. W. (1960): Annual Report of The Valley Trust, pp. 16 - 25.
2. White, E. (1958): Annual Report of The Valley Trust, pp. 22 - 38.
3. Stott, H. H. (1959): *A Pilot Health Study*. Geneva: World Health Organization.
4. McCarrison, R. and Sinclair, H. M. (1944): *Nutrition and Health*. London: Faber & Faber.
5. Stott, H. H. (1962): Paper presented at United Nations Conference on the Application of Science and Technology for the Benefit of the Less Developed Areas.
6. State Health Department (1951 - 1966): Annual Reports, Botha's Hill Health Centre.
7. Department of Agricultural Technical Services, Pretoria: Personal communication.
8. Krige, E. J. (1962): Annual Report of The Valley Trust, pp. 15 - 21.
9. Krige, J. D.: Report to The Valley Trust.

A P P E N D I X E

"THE VALLEY TRUST EXPERIMENT IN RAISING THE NUTRITIONAL STANDARDS OF A LESS-DEVELOPED RURAL COMMUNITY"

Stott, H.H., M.B., Ch.B.(Edin.)

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The Valley Trust Experiment in Raising the Nutritional Standards of a Less-Developed Rural Community

H. H. STOTT, M.B. CH.B. UNIV. EDIN., *Botha's Hill, Natal*

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SUMMARY

The Valley Trust, a socio-medical experiment focused on the promotion of health, with particular emphasis on raising nutritional standards, has for some years been sponsoring and establishing a variety of services in the area, which aim at a wide and practical approach to the problem. These services, *inter alia*, include a nutrition education unit, agricultural advice and assistance in the layout and construction of vegetable gardens, poultry keeping, fish culture, soil rehabilitation, water conservation and protective fencing.

Between these agencies for change and the Botha's Hill Health Centre (a medical service administered and financed by the State), are doctors and nurses initiating patient interest in dietary reform before they pass to the Nutrition Education Unit and the agricultural section.

The far-reaching importance of the association between the doctor, nurse, nutrition educator, and agricultural demonstrator is discussed, along with other aspects and principles of development, and the effect of the over-all programme on the dietary habits of the community is evaluated.

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BACKGROUND AND PROBLEMS

The 45 000 Zulus living in the Valley of a Thousand Hills at Botha's Hill, Natal, represent in microcosm the universal problem of diminishing food resources in the face of alarming population growth—the problem cycle of ignorance, apathy, low productivity, poverty, malnutrition and disease.

Dietary Changes

Their traditional, wholesome diet, consisting largely of whole grain maize, millet, legumes, *amaasi*, roots, tubers and spinaches, has given way to more easily procurable, refined foods, such as sifted mealie meal, samp, mealie rice, white-flour products, commercial sugar and other articles of diet, high in carbohydrate and deficient in protein and other essential nutrients.[1]

Deterioration of Agricultural Practices

The transition from a pastoral economy to employment in industry, with its attendant problems of migrant labour and social disruption, has left the people with a poor agricultural tradition. The neglect and mismanagement of soil and haphazard destruction of covering vegetation, is widely evident and is relevant to any realistic and constructive programme for improving nutritional standards, particularly in the light of a rapid increase in population. The impoverishment and loss of soil is reflected in the deterioration of plant life and contributes in no small degree to malnutrition in its many forms.

Fatalism and Cultural Taboos

Taboos, superstitions and mystical conceptions of disease, such as the anger of ancestors, bewitchment and the malice of enemies are widely prevalent.[2] These not only negate much of the preventive and curative measures of orthodox medical services, but prevent the majority of the people from associating food with health and selecting food for considerations other than palatability, appeasement of hunger and cost. With the onset of illness, the medicine bottle, injection or administrations of traditional medicine-men, are expected to effect a cure without any need for personal effort on the part of the patient. Allied to this is fatalism, which enables people to accept death from some preventable condition as something beyond human control; so, to compensate for a high child mortality, a high propagation rate persists.[3]

Poverty, Ignorance and Apathy

Poverty, of course, plays a large part in the causation of malnutrition; the major problem, however, is poverty of knowledge—ignorance of the relationship between food and health, of the value of sound soil husbandry, of the potential of the soil to produce health-giving foods, of the destructive effects of bad cooking practices and, not the least important, ignorance of sound infant- and child-feeding principles. In spite of severe soil erosion and loss of soil fertility, aggravated by recurrent drought and destructively precipitate rainfall, there is in the Valley considerable potential for the production of protective foods. The challenge, however, is to break through ignorance and apathy and arouse human interest and initiative. This

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human problem is only too well known to the many frustrated trained and experienced agricultural demonstrators working in isolation in these rural circumstances.

APPROACH TO THE PROBLEM AND MEANS BY WHICH NUTRITION IS BEING IMPROVED

An Attitude of Self-Reliance

With malnutrition having its roots in a multiplicity of social, economic and environmental factors, it is obvious that any attempt to raise nutritional standards calls for a broadly based long-term programme, particularly in rural areas. Temporary measures of expediency, such as food distribution schemes and food fortification without parallel long-term measures striking at root causes, stultify human initiative and effort, and the care and utilization of natural resources.

Co-operation between State and Voluntary Associations in Promoting Health

It is against this background that the Valley Trust socio-medical experiment at Botha's Hill, Natal, has evolved over the past 20 years. The focus has been on the promotion of health, with particular emphasis on raising nutritional standards. It is a registered welfare organization entirely dependent upon voluntary public support. The medical component of the over-all experiment is provided by the State-financed and administered Botha's Hill Health Centre, operating in a centrally-situated building leased from the Valley Trust.

Doctor and Nurse Arousing Patient's Interest in Proper Dietary Habits

A close and essential functional relationship exists between the Health Centre and the many services and facilities provided by the Valley Trust. The co-operation of the clinician and nurse in awakening patient interest in dietary habits is fundamental to the success of the entire nutrition education programme. It has been shown that there is no one better situated to initiate and stimulate his interest, than the clinician functioning at the interface between the patient, conditioned by concern over illness, and the agencies for change. The traditional esteem afforded the 'doctor' in Bantu society, places the orthodox clinician in an incomparable position for gaining patient interest in dietary habits and so preparing the way for the complementary services of the nutrition educator, and in the rural context, the agricultural demonstrator. In the absence of the clinician, a trained and genuinely interested nurse working on her own, can also have a profound motivating influence on patients in this respect. At the Botha's Hill Health Centre and the Valley Trust, where this association and co-operation between doctor, nurse, nutrition educator and agricultural demonstrator is in operation, the realism of the link between dietary habits and health is being recognized by the community, with far-reaching benefit not only in nutritional standards, but in soil rehabilitation and food production.

Patient Referred to Qualified Nutrition Educator and Practical Demonstration

From the Health Centre the conditioned patient passes to the adjacent Valley Trust Nutrition Education Unit more ready to receive the advice to be offered and more responsive to practical demonstration. Here the nutrition educator, a trained nurse, carries the educative process further by measures suitable to the circumstances and intelligence of the patient. Particular attention is given to the diet of women during pregnancy and lactation, to infant feeding techniques and the dietary needs of children. Cooking demonstrations, popularizing medically recommended foods and nutritious indigenous dishes, are carried out in a nearby half-open rondavel strategically situated in the centre of a demonstration vegetable garden. Methods used are of the simplest and follow traditional patterns, so that no essential equipment is beyond the means of the poorer members of the community. The focus in this section is on the use of foods of good nutritional value that are within the abilities of all members of the community to grow, and on the demonstration of methods of food preparation that cause minimal damage to nutrients.

Agricultural Demonstration

It will be appreciated that the nutrition education section also provides an incentive to vegetable gardening. The patient is therefore encouraged to return and visit the agricultural section, which now has meaning and purpose and is seen as relating to his own future welfare. Here he will become aware of the potential in the soil for producing the foods which have been medically recommended and, furthermore, that they are not beyond his ability and resources to grow. As prolonged drought periods are almost an annual occurrence, emphasis is placed on the restoration of organic matter to the soil for its moisture-holding as well as its many other properties and functions relative to soil fertility. This was well demonstrated in a long-term investigation on methods of soil management carried out at the Valley Trust from 1961 to 1966.[4] The use of organic matter is fundamental to all Valley Trust vegetable gardening activities and is effected mainly by composting, mulching, trenching and the use of poultry deep-litter.

Diversified but Co-ordinated Assistance Offered by The Valley Trust

The following are some aspects of the programme:

(a) Long-term practical measures aimed at raising nutritional standards include demonstration vegetable gardens at the Valley Trust and at strategic

points throughout the area, as well as at schools and peripheral clinics;

(b) a home-produce market stimulates the production of surplus vegetables and fruit for sale;

(c) demonstration dams for water conservation and fish culture—the latter is being encouraged as a practical means of meeting the serious lack of protein in the diet, especially in infants and children;

(d) a maize grinding mill to enable the community to consume 'straight run' maize, with all nutrients intact;

(e) demonstrations on the deep-litter system for poultry keeping and the value of the deep-litter as a garden fertilizer;

(f) small vegetable gardens laid out as a relief measure for families handicapped by chronic illness and the loss of the breadwinner;

(g) home visiting to advise and guide in matters relative to vegetable gardening, including fencing, water conservation, fish-dam construction and poultry keeping;

(h) a fund to enable suitable members of the community to acquire protective fencing for vegetable gardening on an interest-free, long-term repayment basis;

(i) distribution of fruit trees and top quality seeds and seedlings to handicapped families at appropriate planting times; and

(j) paid employment of schoolchildren during holidays.

PROGRESS AND ACHIEVEMENTS

Ten years ago a sample of the 94 families that had made gardens in the Nyuswa and Qadi tribal areas was investigated under the direction of the Department of African Studies, Natal University.[5] This brought to light the following interesting facts, highly relevant to a long-term programme of this character. The response to the gardening campaign had been good, especially in view of the absence at labour centres of 71% of the able-bodied men between the ages of 15 - 60 years; 38% of the gardeners were migrant labourers, who managed to combine gardening with work in Durban, Pinetown and elsewhere; 70% of all gardens in the sample were the direct result of encouragement given, and ideas imparted, by the Valley Trust; all families with gardens consumed the vegetables themselves; 54% of these sold vegetables as well; 90% of the gardens had young fruit trees such as peach, avocado, apple, mango, guava, mulberry, also pineapple and banana plants—all had been distributed from the Valley Trust.

No further studies of this order have been carried out to date, but the Department of African Studies has recently initiated a 'follow-up' of a health and nutrition study, which was conducted in the Valley for World Health Organization in 1958-9.[6] The results will not be available until early 1973.

In the meantime there are, however, several aspects of development that indicate the over-all socio-medical experiment is making an appreciable impact on the dietary habits of the community. In the Nyuswa and Qadi areas, for instance, the last 10 years have seen an increase in the number of vegetable gardens from 94 to 343. The total for all areas under Valley Trust influence now stands at over 600, the majority of which stem from Valley Trust activities. While most of these gardens are poorly maintained, there are some that are significantly outstanding with a high degree of productivity. Further responses and developments have been the appearance of 23 roadside produce stalls near home vegetable gardens; the construction of 86 dams—30% of which are stocked with *Tilapia*; increasing use of the Valley Trust mill—19 133 kg of maize were brought for grinding this year; unabating demand for vegetable seeds and seedlings and increases in the production and consumption of beans, coinciding with the intensive propaganda of Health Centre and the Valley Trust for a greater use of this protein food.

A development of considerable significance has been the change in the purchasing habits of the community. Whereas there was little or no call for vegetables and fruit 15 years ago, according to traders throughout the Valley, the demand for these and legumes has increased and accelerated markedly, particularly during the past 10 years.

That there has been an increase in the production and consumption of protective foods in the area is clearly evident; but until further studies have been completed, it will not be possible to assess by how much nutritional standards have improved or to what extent a material contribution may have been made to the health of the people. In this latter respect however, the testimony of doctors and nurses with 15 - 20 years' experience in the Health Centre, must be considered as very encouraging. In their opinion, the incidence of malnutrition has dropped markedly in the surrounding areas, its incidence increasing the further away one moves from the Health Centre and the Valley Trust—a trend evident from an early stage and supported by a statistical investigation based on Health Centre records.[7]

REFERENCES

1. White, E. (1958): Report on Investigations into the Nutritional Habits and Problems of the Zulus in the Valley of a Thousand Hills (Annual Report of the Valley Trust), pp. 22 - 38.
2. Van Nieuwenhuijsen, J. W. (1960): The Witchdoctor Institution in a Zulu Tribe (Annual Report of The Valley Trust 1960), pp. 16 - 25.
3. Williams, Cicely D. (1954): Lancet, **1**, 323.
4. Lintner, J. (1960 - 1966): Long-Term Trenching-Fertiliser Experiment at The Valley Trust (Annual Reports of The Valley Trust 1960 - 1966).
5. Krige, E. J. (1962): 'Some Aspects of the Impact of The Valley Trust on the Nyuswa and Qadi of the Valley of a Thousand Hills (Annual Report of the Valley Trust 1962), pp. 15 - 21.
6. Stott, H. H. (1959): *A Pilot Health Study*, WHO/PHA/33. Geneva: World Health Organization.
7. Krige, J. D. (1961): Unpublished report to The Valley Trust.

REFERENCES

Bryant, A.T. 1949 The Zulu People. Shuter & Shooter, Pietermaritzburg.

1965 Olden Times in Zululand and Natal. C. Struik, Capetown.

Davidson, S. and Passmore, R. 1966 Human Nutrition and Dietetics. E. & S. Livingstone, Ltd., Edinburgh and London.

Gilbey, R. 1961 A Psychological Study of the Effects of Kwashiorkor on Children in the Valley of a Thousand Hills. The Valley Trust.* Annual Report, 1961, pp. 16-19.

Horrell, M. 1970 A Survey of Race Relations in South Africa. South African Institute of Race Relations, pp. 255-256.

Krige, E.J. 1957 The Social System of the Zulus. Shuter & Shooter, Pietermaritzburg. First published Longmans, 1936.

1962 Some Aspects of the Impact of The Valley Trust on the Nyuswa and Qadi of the Valley of a Thousand Hills. The Valley Trust. Annual Report, 1962, pp. 15-21.

Krige, J.D. 1957 Valley Trust Research Objectives and Activities. The Valley Trust. Annual Report, 1957, pp. 22-23.

Krige, J.D. (Jr.) 1961 Report to The Valley Trust. (Incorporated in Stott, H.H. 1968, p. 1118). See under Stott.

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Copies of these booklets, or photo-copies of sections required, are available from The Administrative Officer, The Valley Trust, P.O. Box 33, Botha's Hill, 3660 South Africa.

Lintner, J. 1960 A Preliminary Soil Study. The Valley Trust. Annual Report, 1960, pp. 26-30.

1961 A Preliminary Soil Study. The Valley Trust. Annual Report, 1961, pp. 20-25.

1962 A Preliminary Soil Study. The Valley Trust. Annual Report, 1962, p. 24.

1963 Long-Term Trenching-Fertilizer Experiment at The Valley Trust. The Valley Trust. Annual Report, 1963, pp. 23-25.

1964 Long-Term Trenching-Fertilizer Experiment at The Valley Trust. The Valley Trust. Annual Report, 1964, pp. 26-28.

1966 Long-Term Trenching-Fertilizer Experiment at The Valley Trust. The Valley Trust. Annual Report, 1966, pp. 24-25.

Malie, M. 1957 Preliminary Report on Nyuswa Crops and Diet. Prepared under the direction of Professor E.J. Krige, Head of the Department of African Studies, University of Natal. (Unpublished).

Manning, E.B. Mann, J.I. Sophangisa, E. and Truswell, A.S. 1971 Dietary Patterns in Urbanised Blacks. South African Medical Journal, Vol. 48, pp. 485-498.

Mbatha, M.B. 1960 Migrant Labour and its Effects on Tribal and Family Life among the Nyuswa of Botha's Hill. Dissertation submitted for the degree of Master of Arts, University of Natal.

McGrath, M. 1964 Summary of a Report on The Valley Trust System of Growing Vegetables. The Valley Trust. Annual Report, 1964, pp. 19-25.

Plant, R. 1905 The Zulu in Three Tenses. Pietermaritzburg.

Preston-Whyte, E. and Sibisi, H. 1975 Ethnographic Oddity or Ecological Sense? Nyuswa Zulu Descent Groups and Land Allocation. African Studies. Vol. 34, pp. 283-316.

Shanley, B.M.G. and Lewis, O.A.M. 1969 The Protein Nutritional Value of Wild Plants used as Dietary Supplements in Natal (South Africa). Plant Foods for Human Nutrition. Vol. 1, No. 4, pp. 253-258.

Sibisi, H. 1972 Health and Disease among the Nyuswa Zulu (an ethnographic account). Dissertation submitted for the degree of Doctor of Philosophy, University of Cambridge.

* (In the press) Zulu Cosmology. Academic Press, London and New York.

Stopforth, P. and Mack, K. Socio-Cultural Background and Household Nutrition among Africans in the Vicinity of The Valley Trust, Natal. (Publication pending).

Stott, H.H. 1951 Botha's Hill Health Centre Annual Report, 1951. Appendices A, B & C.

1952 Botha's Hill Health Centre Annual Report, 1952, pp. 3-5 and 8.

1957(a) Botha's Hill Health Centre Annual Report, 1957, pp. 3-4.

(b) The Valley Trust. Annual Report, 1957, pp. 14-15.

1959 A Pilot Health Study of the Zulu Community of Botha's Hill, Natal, South Africa. World Health Organization, Geneva, WHO/PHA/33.

1962 A Socio-Medical Experiment in Improving the Dietary Patterns of a Less-Developed Community in the Republic of South Africa. Paper contributed to the United Nations Conference on the Application of Science and Technology for the Benefit of Less-Developed Areas. E/CONF.39/C/210 p. 6 : para. 30.

1968 The Valley Trust: A Socio-Medical Experiment. South African Medical Journal. Vol. 42, pp. 1115-1118.

1972 The Valley Trust Experiment in Raising the Nutritional Standards of a Less-Developed Rural Community. South African Medical Journal. Vol. 46, pp. 1572-1574.

* Please note that the reference by SIBISI, H. (in the press) was published under the author's married name and under a different title, as follows:

NGUBANE, H. Body and mind in Zulu medicine. Academic Press, London and New York, 1977.

Stott, H.H. 1973 African Patients and Nutrition Education. Chapter 4, Section 2, pp. 502-506 in Campbell, G.D., Seedat, Y.K., Daynes, G. (eds.) Clinical Medicine in Africans in Southern Africa. Churchill Livingstone, Edinburgh and London.

Stott, H.H., Towert, S., Nzimande, Ramohanoe, F, and Mohapi, G. 1967 The Valley Trust. Symposium. South African Nursing Journal. Vol. XXXIV, No. 7, pp. 23-27.

Stott, N.C.H. 1973 Said, Sowed and Sold. South African Medical Journal. Vol. 47, pp. 1507-1511.

van Nieuwenhuijsen, J.W. 1960 The Witch-Doctor Institution in a Zulu Tribe. The Valley Trust. Annual Report, 1960, pp. 16-25.

1974 Diviners and their Ancestor Spirits. Study of the Izangoma among the Nyuswa in Natal. University of Amsterdam (Afdeling Culturele Anthropologie, Anthropologische - Sociologisch Centrum, Uitgave 3) 37 pp., tabs.

Vilakazi, A. 1957 A Reserve from Within. African Studies. Vol. 16, pp. 93-101.

1960 Zulu Social Structure and its Dynamics Today. Dissertation submitted for the degree of Doctor of Philosophy, University of Natal.

1962 Zulu Transformations. University of Natal Press, Pietermaritzburg.

White, E. 1958 Report on Investigations into the Nutritional Habits and Problems of the Zulus in the Valley of a Thousand Hills. The Valley Trust. Annual Report, 1958, pp. 22-38.

World Health Organization (WHO) 1960 Local Health Service. World Health Organization Technical Report Series, No. 194, Geneva. Pp. 5 and 47-48.

World Health Organization (WHO) 1973 Trace Elements in Human Nutrition. World Health Organization Technical Report Series, No. 532, Geneva, 1973.